Telegram—INMEDICI, CALCUTTA. *This Issue Exceeds 5,750 Copies.*

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

ESTD. 1928 INDIAN MEDICAL ASSOCIATION

LIBRARY

Editor: KUMUDSANKAR RAY, M.A., B.SC., M.B., CH.B. (Edin.), M.L.C. (Bengal)
Assistant Editors: SISIRCHANDRA CHATTERJEE, M.D., M.R.C.P., D.P.H.
B. P. NEOGY, M.B., M.R.C.P. (Lond.), M.R.C.S. (Eng.)
Secretary: ANILKUMAR CHAKRABARTY, M.B.

Volume XI CALCUTTA, JULY, 1942 Number 10

War against Syphilis

THIARSIN

A potent organic compound of arsenic of low toxicity for intramuscular use in all stages of syphilis. Every batch before issue is tested chemically and biologically. Available in 0·075 gm., 0.15 gm., 0·30 gm., 0·45 gm. and 0·60 gm.

THIARSIN SOLVENT

This solvent containing Chloretone, Guaiacol and Glucose has been introduced to make the injection of Thiarsin absolutely painless even in sufficient concentration. Highly useful for hypersensitive patients. It is issued in boxes of six 5 c.c. ampoules.

BENGAL CHEMICAL & PHARMACEUTICAL WORKS LD.
CALCUTTA :: :: BOMBAY

Association Office
Samavaya Mansions, Calcutta

Annual Subscription
Inland Rs. 6/-, Foreign 9s. or $3

BLOOD-VITA

The Ideal Tonic and Blood-purifier.

Ancient Indian herbs with Vitamin B extract in modern therapeutic form. Analytical and Biological tests prove its active components and tonic effect on checking rat's growth in the Government Laboratory.

1. Presence of natural **Vitamin B & B_1** in high-potency not only strengthen the nervous-system but also powerfully improve digestion and appetite.
2. **Iron** in active and assimilable form helps to stimulate the hæmopoietic organs.
3. **Calcium Glycerophosphate,** a valuable ingredient in nervous disorder and in low metabolic activity, has enhanced its medicinal value. Manganese, as catalyst also helps the hæmoglobin synthesis.
4. **Strychnine,** in minute traces tones up the flagging nervous system.

Very useful in correcting and regularising the disordered and constipated bowels.

Taste most appetising.

AMB'S

MEDICAL RESEARCH LABORATORY

P.23. CENTRAL AVENUE, CALCUTTA..PHONE-B.B. 1289.

B.V.6. AURORA

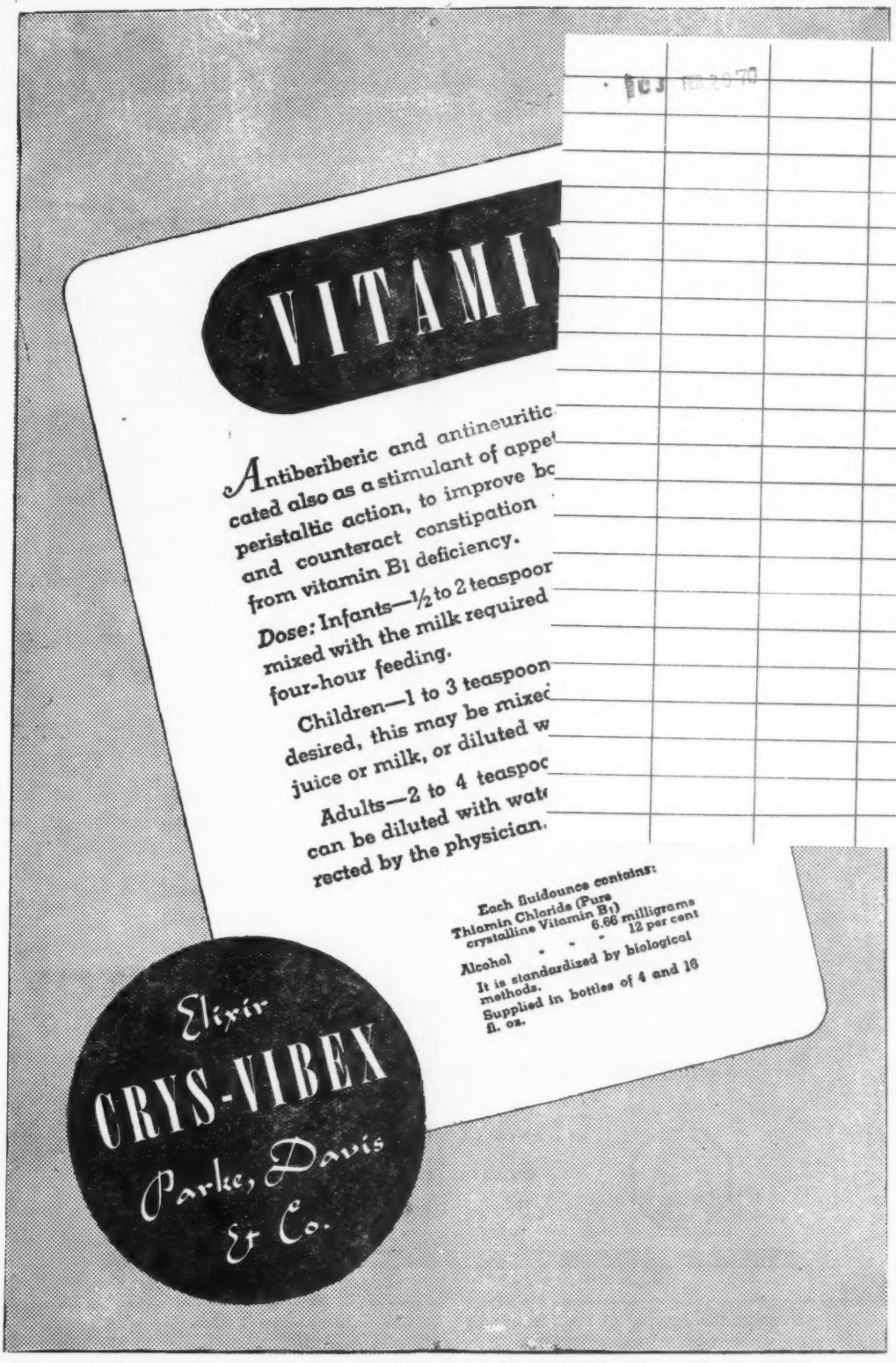
LILY BRAND BARLEY

Delicious drink

& diet in all

Seasons

Highly Recommended by Physicians.


VITAMI
Antiberiberic and antineuritic
cated also as a stimulant of appe
peristaltic action, to improve bo
and counteract constipation
from vitamin B1 deficiency.
Dose: Infants—½ to 2 teaspoor
mixed with the milk required
four-hour feeding.
Children—1 to 3 teaspoon
desired, this may be mixed
juice or milk, or diluted w
Adults—2 to 4 teaspoo
can be diluted with wat
rected by the physician.
Each fluidounce contains:
Thiamin Chloride (Pure
crystalline Vitamin B1) 6.66 milligrams
Alcohol - - - 12 per cent
It is standardized by biological
methods.
Supplied in bottles of 4 and 16
fl. oz.
Elixir
CRYS-VIBEX
Parke, Davis
& Co.

ST. PETERSBURG, RUSSIA

— FIRST REPORTED CASE OF

AMŒBIASIS

Physicians today are more fully alert in diagnosing amœbiasis as they now realize the disease may be found anywhere.

Entero-Vioform "Ciba" has steadily gained professional esteem for effectiveness against the Endamoeba histolytica and its cysts, where dysentery is present, or for symptomless carriers.

Entero-Vioform combines highest therapeutic activity with an extremely low toxicity.

Further information from the sole importers :

CIBA (INDIA) LIMITED

Pharmaceutical Department

P. O. Box 479 BOMBAY

GONORRHŒA

* DAGENAN - M & B 693 *

"This drug can confidently be recommended as an almost 'specific' cure for gonorrhœa, and it is undoubtedly the most potent means of attack on gonorrhœa available at present." (Lees, 1940, Appendix III—Practical Methods in the Diagnosis and Treatment of Venereal Diseases.)

DAGENAN - M & B 693 can exert its curative action at a very early stage in the disease. The obvious urethral discharge in acute cases usually disappears with dramatic rapidity.

Confusion of DAGENAN - M & B 693 (sulphapyridine) with sulphanilamide should be avoided. Numerous published reports prove that DAGENAN - M & B 693 is the most effective sulphonamide in the treatment of gonorrhœa.

DOSAGE FOR ADULTS

MALES: Six 0.50 gramme tablets a day (2,1,1,2) for seven days or four tablets a day (1,1,1,1) for two to three weeks—with or without lavage.

FEMALES: Four 0.50 gramme tablets a day (1,1,1,1 or ½ tablet 2-hourly) for two weeks, repeated after a fortnight's interval if necessary; local treatment confined to swabbing unless trichomonal infection is present. In cases of chronic infection it may be of advantage to delay administration of "M & B 693" until the onset of menstruation.

DOSAGE FOR CHILDREN

VULVO-VAGINITIS:
0.25 gramme (to 0.50 gramme) four times a day for five days, repeated after a fortnight's interval if necessary. No local treatment of vagina or urethra.

OPHTHALMIA NEONATORUM:
0.125 gramme (1 children's tablet) powdered and suspended in milk, with a pinch of bicarbonate of soda, four times daily for the first two days and thrice daily for four days longer—together with saline irrigations of the eye.

Supplies

ADULT—
CONTAINERS OF 25 × 0.50 Gm. tablets
CHILDREN—
CONTAINERS OF 25 × 0.125 Gm. tablets

★TRADE MARK.

MAY & BAKER (INDIA) LTD.
BOMBAY • CALCUTTA

Products of Bathgate's Laboratories

CARBARSONE: Capsules and Tablets in bottles of 20.

SULPHARSPHENAMINE: Tested both chemically and biologically to conform to the International Standard. Issued in the following strengths, 6, 12, 18, 24, 30, 36, 42, 48, 54 and 60 centigrammes.

CARBANTIM: The Carbamide derivative of p-aminophenyl Stibinic Acid for Intravenous injection in Kala-azar. Ampoules of 0.025, 0.05, 0.10, 0.15 and 0.20 gm.

Bathgate & Co.
CHEMISTS CALCUTTA

CAUTION IS NOT COWARDICE

So many of you have left for your village homes or sent away your families to the remote mofussil, as measure of safety in these war days. They are uncharitable who call your prudence feebleness of heart. But the question is—have you done all you could do for the safety and comfort of your near and dear ones?

In summer, when water is scanty and rendered impure, bowel complains generally—are the order of the day. Have a phial of **KARPURASAB** handy. Put in 5 drops daily in your water pitcher and use it. This is a sure antidote and an effective preventive.

Have a phial of

KARPURASAB

handy. Put in 5 drops daily
Equip yourselves with this specific and insure against cholera.

Ask your Chemists to stock it.

C. K. SEN & CO., LTD.
Jabakusum House, Calcutta.

Surgical Instruments, Hospital Furniture, Orthopaedic Apliances, Belts, Splints, Trusses, Rubber Goods, Optical Goods, Bottles, Metal & Glasswares etc. etc.
CATALOGUES FREE
BABBLA BROTHERS LTD
APPROVED GOVT. CONTARACTORS
SURGEONS' INSTRUMENTS MAKERS LAHORE.

NOTICE TO BRANCH MEMBERS

MEMBERS of the various branches of the INDIAN MEDICAL ASSOCIATION and of the Societies affiliated to it are requested to note that all communication about non-receipt of the *Journal of the Indian Medical Association* in time should be addressed to the undersigned and not to their respective Branches or Societies.

If the Journal is not received by the 15th of the month it is desirable that an enquiry should be made at the first instance at the local post office and then to the

Secretary,
JOURNAL OF THE INDIAN MEDICAL ASSOCIATION,
SAMAVAYA MANSIONS, CALCUTTA.

CONTENTS

Page

Phrenic Evulsion: A Review of Cases
—K. S. RAY, M.A., B.SC., M.B., CH.B. (Edin.), F.S.M.F. (Bengal),
N. SEN, M.B., T.D.D. (Wales),
&
D. K. SARKER, L.M.F. 293

A Study of the Action of Protamine Zinc Insulin and Suggestions on its use in the Treatment of Diabetes Mellitus
—P. KRISHNA RAO, B.SC., M.B.B.S., D.T.M. & H. (Eng.),
S. ANANTHASWAMY, M.B.B.S., B.SC.,
&
B. K. RAMANNA, M.B.B.S. 298

Seven Days Fever (?)
—BHUPAL SINGH, B.A., M.B. 303

EDITORIAL NOTICE

¶ Manuscript for publication, books for review and correspondence relating to the editorial management should be sent to the Editor, JOURNAL OF THE INDIAN MEDICAL ASSOCIATION, Samavaya Mansions, Calcutta. Communications regarding subscriptions, reprints, etc., should be addressed to the Secretary, JOURNAL OF THE INDIAN MEDICAL ASSOCIATION, Samavaya Mansions, Calcutta.

¶ Articles are accepted for publication on condition that they are contributed *solely* to the JOURNAL OF THE INDIAN MEDICAL ASSOCIATION. Manuscripts *must be typewritten* preferably double spaced, and the *original* copy should be submitted. Zinc etchings and halftones of illustrations will be supplied by the JOURNAL when the original illustrations warrant.

¶ **Contributions to the regular issues of the Journal should ordinarily be limited to eight printed pages, not counting the spaces occupied by illustrations, and it is understood that they have not been published elsewhere.**

¶ Footnotes and bibliographies should conform to the style of the Quarterly Cumulative Index Medicus, published by the American Medical Association. This requires, in order given: name of author, title of article and name of periodical, with volume, page, month—day of month in weekly—and year.

¶ Matter appearing in the JOURNAL OF THE INDIAN MEDICAL ASSOCIATION is covered by copyright; but, as a rule, no objection will be made to its reproduction in reputable journals, if proper credit is given. However, the reproduction for commercial purposes of articles appearing in the JOURNAL OF THE INDIAN MEDICAL ASSOCIATION will not be permitted.

¶ Authors of articles and case notes will receive twenty-five reprints free; additional reprints may be obtained at cost.

¶ REVIEWS. The Journal will make an especial feature of the reviews of monographs and books bearing upon the field of medicine. Authors and publishers wishing to submit such material should send it to the Editor. While obviously impossible to make extended reviews of all materials, an acknowledgment of all books and monographs sent will be made in the department of reviews.

¶ THE JOURNAL OF THE INDIAN MEDICAL ASSOCIATION is published monthly. Annual subscription Rs. 6/- (Inland), 9*s.* or $3 (Foreign). Postage free. Single copy annas eight only.

¶ Cheques, etc., should be made payable to the Secretary, THE JOURNAL OF THE INDIAN MEDICAL ASSOCIATION, Samavaya Mansions, Calcutta.

PRE-EMINENT FOR PURITY AND EFFICACY

DEXTROSOL

the physician's all-purpose glucose powder

Safe Dependable Economical

The 1 lb. tin.

Dextrosol is the purest form of anhydrous dextrose, more than conforming to British Pharmacopoeia Specifications, and is used with outstanding success wherever conditions call for the administration of glucose by any one of the methods known to medical science.

An excellent ANTISEPTIC and HEMOSTATIC too!

Dextrose poultice or concentrated solution is used to provide biologic antisepsis in both internal and external conditions. Offensive discharging wounds or sores, infected operation wounds, pruritis vulvae and ani and various skin infections are thus healed. (Kellog, Am. Jl. Surg. 1926.)

In the treatment of atonic wounds, gauze bandages soaked in 40% Dextrose solution cause the discharge to cease and yield better results than the standard therapeutic agents. (Lafrensniere—1936.)

The convenient 4 oz. pack for your poorer patients.

PURE ANHYDROUS DEXTROSE B.P.

DEXTROSOL

Professional sample and literature gladly supplied free and post-free on request.

CORN PRODUCTS CO. (India) LTD., — P. O. Box 994, Bombay. — P. O. Box 2191, Calcutta.

Just arrived? Exceedingly cheap

TABLET MACHINE

We are really proud to be able to supply this elegantly finished, durable, most easy to manipulate, only 25 tolas weighing, highly nickeled solid brass Unique machine, when import is so very difficult. It produces ½ to 10 grains ⅜" & 5/16" two diameter's round Tablets of Standard foreign preparations shape just like "ASPRO", etc. from every kind of Powder or Paste at a speed of about 400 Tablets per hour. Nett Price Rs. 15/-. Postage -/9/-. Refund of money guaranteed if not approved.

THE MEDICAL MACHINES SUPPLY CO.,
Kayasthana, Cawnpore.

BOTANICAL DRUGS

(Indian and Foreign)

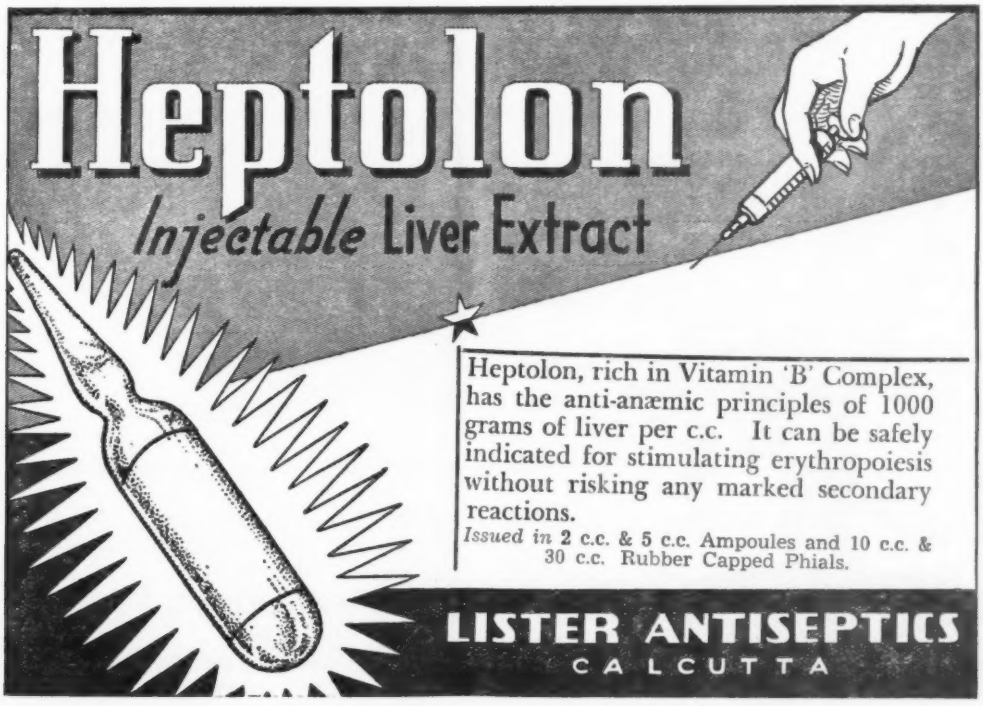
Scilla, Digitalis, Cinchona Bark, Polygala Chinasis, Nuxvomica, etc., also Ergot of Rye, Lobelia, etc.

Exporters & Importers.

P. C. DAWN & CO.,
1, MACHUABAZAR ST., CALCUTTA.
Phone: Barabazar 4165

***CONTENTS*– (*Contd.*)**

	Page.
More Observations on Bronchiectasis —S. S. MISRA, M.D. (Hons.), M.R.C.P. (Lond.)	308
Surgical Shock —BAHADUR KHAN, F.R.C.S. (Eng.), M.CH. (Leeds)	311
Editorial: Superficial Punctate Keratitis	317
Case Note: A case of Chronic Ulcer Treated with Lead Plate —A. C. BOSE, M.B.	319
Current Medical Literature	320
Notes and News	326
Correspondence	328
Association Notes	cxiii


Heptolon
Injectable Liver Extract
Heptolon, rich in Vitamin 'B' Complex, has the anti-anæmic principles of 1000 grams of liver per c.c. It can be safely indicated for stimulating erythropoiesis without risking any marked secondary reactions.
Issued in 2 c.c. & 5 c.c. Ampoules and 10 c.c. & 30 c.c. Rubber Capped Phials.
LISTER ANTISEPTICS
CALCUTTA

ST. BARTHOLOMEW'S HOSPITAL OPERATION TABLE

with the

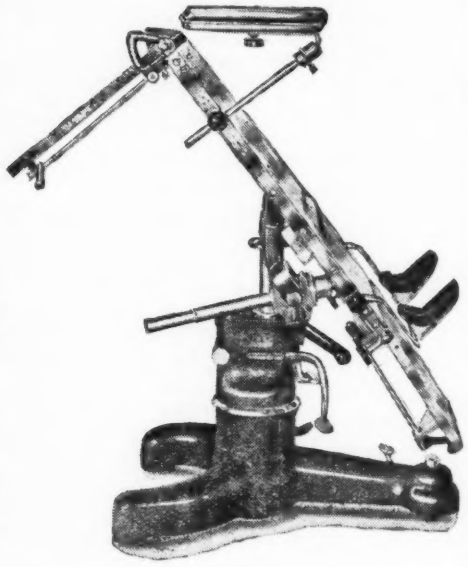
Latest Improvements

including

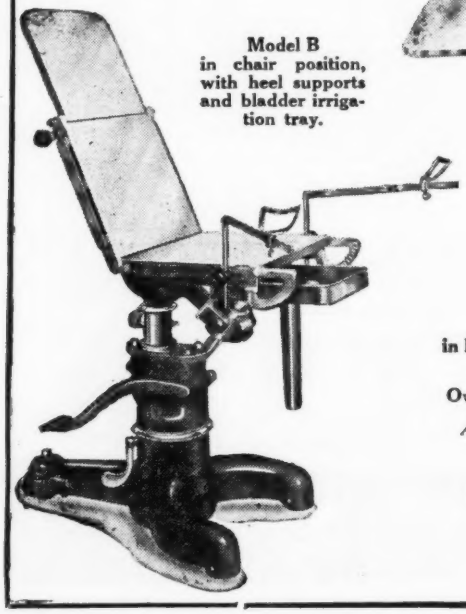
Easy to operate Release Lever for lowering the table; Trendelenburg position increased to 55° tilt; Foot operated rubber-covered Floor Brake.

The St. Bartholomew's Hospital Operation Table is now manufactured in five different models and thus supplies a range of modern operation tables embodying the latest ideas of well-known surgeons for carrying out surgical operations.

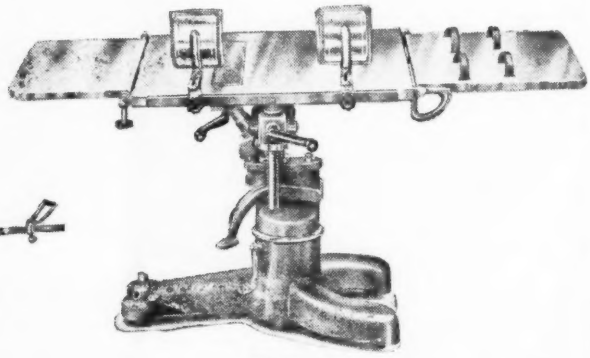
All models can be supplied with either tripod or platform base.



Model A
In Trendelenburg position, 55° tilt, showing shoulder rests and instrument tray in position.



Model B
in chair position, with heel supports and bladder irrigation tray.



Model AC
in lateral position, with back elevator and lateral supports.

Over 1075 of these tables are in use at home and abroad.

A descriptive booklet, fully illustrated, will be sent on request.

ALLEN & HANBURYS LTD.
(Incorporated in England)
CLIVE BUILDINGS, CALCUTTA
and at 37 Lombard Street, London, E.C.3

The Importance of VITAMINS A & D

The maintenance of the reserves of vitamins A and D at the normal physiological level is of the utmost importance, and especially so when the demand is increased, such as during pregnancy and lactation.

Lack of the "epithelium-protecting" vitamin A leads to increased susceptibility to colds, catarrhal conditions and the like; in pregnancy it is a frequent cause of maternal ill-health.

Deficiency of vitamin D leads, in adults, to osteomalacia and lowered resistance to infection; in children, to rickets and defective dentition.

INDICATIONS:

Rickets, osteomalacia, colitis, cystitis, as a dietary supplement during pregnancy and lactation, and during any regime entailing dietary restrictions, e.g. in coeliac disease, gastric disorders etc.

ADEXOLIN

CAPSULES . . . . In Bottles of 25, 50 & 100.

GLAXO LABORATORIES LTD., Greenford, Middlesex, ENGLAND.

PRODUCT OF THE GLAXO LABORATORIES

Representatives in India:—
H. J. FOSTER & CO., LTD.,
Bombay, Calcutta,
Madras & Lahore.

ANOTHER CONTRIBUTION TO CHEMOTHERAPY

ENTERO-QUINOL

Iodochloroxyquinoline

A specific chemotherapeutic agent
For the treatment of acute and chronic Amœbic Dysentery
and Intestinal Amœbiasis.

Prepared for the first time in India in our Research Laboratory.

Issued in
Tubes of 20 tablets
of 0·25 gm. each.

For further particulars please write to:

EAST INDIA PHARMACEUTICAL WORKS LTD.
TOLLYGUNGE: CALCUTTA

Rapid increase!

in BLOOD COUNT

TREATMENT STARTED WITH 1 cc LIVOSAN Intramuscular and 2VI Livosan plain oral per day.

Curve i — H. B.%
Curve ii — RBC in million
Curve iii — Reticulocyte %

Note the reticulocyte response curve III in the above clinical chart on a case of Macrocytic Hyperchrome Anaemia. This proves beyond doubt the rapid building up of the blood picture in cases of pernicious anaemia within ten days of starting treatment with oral and injectable Livosan every day.

WITH LIVOSAN

The highly concentrated and purified extract of liver for painless intra-muscular and oral administration.

INDICATIONS

All grades of Anaemias especially pernicious anaemias and tropical anaemias.

Other indications include (1) Dermatitis caused by metallic poisoning. (2) Tuberculosis and small pox, (3) such conditions of acute Hepatic insufficiency as Allergy urticaria, Infantile Liver, Asthma. (4) Debility, Neurasthenia, Dyspeptic conditions, Gastric and Duodenal ulcers, hookworm disease, and anaemias of pregnancy.

LIVOSAN

INJECTABLE

Supplied in 2 cc and 5 cc ampoules in boxes of 6 and 12 ampoules packings and 10 cc bulks.

ORAL

LIVOSAN PLAIN—AND LIVOSAN WITH STOMACH extract and traces of Iron and Copper—in bottles.

THE ANDHRA PHARMACEUTICAL WORKS LTD., BEZWADA

CIVILIAN DOCTORS (Licentiates).

Civilian Medical Practitioners are required for Service in local Military Hospitals in India. Candidates must have passed the L.C.P.S., L.S.M.F., or L.M.P., or an equivalent examination, and should be above 45 years of age or medically unfit for General Service as Emergency Commissioned Officer in the Indian Medical Department (Indian Cadre). Retired Civil Medical Officers are eligible and are permitted to draw pension in addition to pay.

Selected candidates will be appointed in Civil capacity, and private practice is allowed provided it does not interfere with the efficient discharge of official duties. Rent free quarters are provided for those living in hospitals.

The rates of pay will be as follows:—

(A) For local service in one Military Station only. Rs. 100/- (consolidated)

(B) For service within the confines of one Military District. Rs. 120/- (consolidated)

The services of these doctors will be terminable by one month's notice on either side.

Detailed particulars can be obtained from

The Surgeon General/Inspector General of Civil Hospitals of Provinces, Assistant Directors of Medical Services of Districts, or the Director General,
INDIAN MEDICAL SERVICE, NEW DELHI.

Increased Capacity for Mental and Physical Effort

Fatigue, nerve strain, and mental inertia are the natural sequelæ of unduly prolonged physical and mental effort. All these symptoms may be ameliorated—or their onset delayed—by the administration of 'Benzedrine' Brand Tablets. Increased initiative, confidence, and a quickening of the mental processes are also consistent effects of the drug. Its power to augment physical energy has been widely established, and in suitable cases—with properly adjusted dosage—it has proved of great service as a safe and efficient war-time emergency measure.

MENLEY & JAMES LIMITED, 123, COLDHARBOUR LANE, LONDON, ENG.
BT50 Agent for India: Mr. Ralph Paxton, 10, Lall Bazar, Calcutta

FILARIA

Is a curable disease though dreaded

our famous

"ARSENO-TYPHOID"

is a harmless and excellent tried remedy for *Elephantiasis* and filarial scrotum, legs, hands, breasts, etc. It is in the market since 1928 and has earned the admiration of the suffering public and the medical profession alike. Goods available from all chemists. Description literature free on request.

CALCUTTA CLINICAL RESEARCH,
6, CHOWRINGHEE, CALCUTTA.

LEXIN THERAPY

NEWER USES OF LEXIN

Snake-bite: Lexin inhalation and intravenous injection, 2 c.c.
Opium Poisoning: Lexin inhalation and intravenous injection 1 c.c. to 4 c.c. Repeat as required.
Influenza: Put a few drops on handkerchief and inhale deeply for a few minutes; repeat every now and then till relief
Hysteria / **Epilepsy** } Inhale as above. or put a drop or two into nostril; this breaks the fit only.
Cholera: Inject 2 c.c. intramuscularly, repeat every hour if necessary. If no pulse, inject 1 c.c. intravenous. Also oral 5 drops on sugar.
Collapse: Intravenous injection 1 c.c.
Trauma and Surgical Shock } Intravenous injection 1 c.c.
Bleeding from any orifice: Inject 2 c.c. intramuscular or 1 c.c. intravenous.
Asthma: In extreme dyspnœa—inject 2 c.c. intramuscular; after 1 hour 2 c.c. intravenous. Only one injection gave prompt relief and permament cure in many cases.
Pains of Cancer: Inject 2 c.c. intramuscular, or 1 c.c. intravenous.

Prices: LEXIN bot. ½ oz. Re. 1-8-0.
Box of 6 ampoules×2 c.c. Rs. 3/12.

P. BANERJI. Mihijam, E.I.R. (India).

Next to Medical Science

INSURANCE can be considered to be one of the most humane professions. To teach people to assist themselves against misfortune and lay up present srength against future weakness is a mission of service to humanity. That the **HINDUSTHAN** has been in this mission of service for the last thirty four years is reflected in its

LASTING ACHIEVEMENTS

Policies in force over	Rs. 18 crores 16 lakhs
Last year's Business nearly	„ 3 crores
Claims paid up to date over	„ 2 crores 25 lakhs

HIDUSTHAN CO-OPERATIVE INSURANCE SOCIETY, LIMITED
HINDUSTHAN BUILDINGS, CALCUTTA.
Branches—Bombay, Madras, Delhi, Lahore, Lucknow, Nagpur, Patna and Dacca.
Agencies—All over India and the East.

ANTISEPTIC and DEODORANT

Analysis:—Pure seawood Iodine, Tri-iodomethane, Methyl Salicylate, Sapo Puriss, Aqua Pure.

PAUL IODINE SOAP

MADE IN ENGLAND

Sole Importers:—PAUL BROTHERS & CO., Nehru Road, Rawalpindi. *Bombay Distributors:*—MESSRS. HERRING & KENT, P.O. Box No. 323, Bombay.

Mention the Journal of the I.M.A. when writing advertisers—It identifies you.

ADRENALIN

Manufactured for the first time in India from Natural Suprarenal glands

By

THE STANDARD PHARMACEUTICAL WORKS LTD.

Biologically assayed as to potency by its effect on blood pressure of Spinal Cat and compared with International Standard.

Chemically tested and purified.

Guaranteed free from undesirable histamine bodies, hence has no bad reaction.

Issued in the form of:—

Adrenalin Chloride

&

Adrenalin Tartrate

(The latter preparation does not undergo deterioration as rapidly as the former and and similar foreign products under tropical conditions)

PREPARATIONS OF ADRENALIN (S.P.W.)

Solution Adrenalin Chloride (1 in 1000)

in ½ c.c. & 1 c.c. ampoules; in 10 c.c. & 30 c.c. Phials.

Solution Adrenalin Tartrate (1 in 1000)

in ½ c.c. & 1 c.c. ampoules; in 10 c.c. & 30 c.c. Phials.

Adrenalin in Oil (Injectable)

2 mg. per 1 c.c. in 2 c.c. ampoule.

Suppliers of the major portion of the Military requirements of the Government of India

THE STANDARD PHARMACEUTICAL WORKS LTD.,
67, South Road, Calcutta

'gram.—'VINTONE' 'phone—P.K. 2900

For
STAPHYLOCOCCAL
Infection
Specify

STANNO SULPHAZIDE

It is a balanced combination of Tin Oxide and Urea Sulphazide, the recognised Sulphonamide compound. Boils, Curbuncles, Acne, Stye and every variety of Staphylococcal diseases can be effectively treated by Stanno Sulphazide.

Tablets for oral use
in
tubes of 20 and bottles of 100.

UNION DRUG CO. LTD. CALCUTTA.

285, BOWBAZAR STREET,

T'Phone: { Cal. 1159. / Cal. 4975.

T'Gram: "Benzoic" Cal.

AOLAN

for

NON-SPECIFIC PROTEIN THERAPY

THE ORIGINAL AOLAN
IS MADE BY

HERTS PHARMACEUTICALS LTD

WELWYN GARDEN CITY, HERTS.

1942

JOURNAL

OF THE

INDIAN MEDICAL ASSOCIATION

Vol. XI *Calcutta, July, 1942* No. 10

PHRENIC EVULSION : A REVIEW OF CASES

K. S. RAY, M.A., B.SC., M.B., CH.B. (EDIN.), F.S.M.F. (BENGAL),

N. SEN, M.B., T.D.D. (WALES) AND D. K. SARKAR, L.M.F.,

From the Jadabpur Tuberculosis Hospital, 24 Parganas, Bengal,

Although a voluminous literature has accumulated on different aspects of a phrenic nerve operation since it was popularised by Felix in 1921, there is hardly any uniformity in the results published by different authors. Those who are competent to speak on the subject have often made conflicting and contradictory statements. Therefore, instead of entering into academic discussion, we shall present briefly in this paper a statistical review of our experience with phrenic operations done on the indoor patients of the Jadabpur Tuberculosis Hospital (Bengal).

Altogether 95 operations have been done up-to-date. Local anæsthesia was used in all cases—5-7 c.c. of novocaine or ethocaine (2 per cent) having sufficed. A longitudinal incision along the posterior border of the sternomastoid was used in most cases. Formerly we made a 1½" incision with its centre opposite the cricoid cartilage. During the last three years we have found it more convenient to use a smaller incision with its top at the level of the cricoid. Transverse incision about an inch above the clavicle was made in a few. It certainly produced a better cosmetic effect but did not give the same amount of exposure of the field of operation which is so essential when the nerve has to be traced above and below. The position and thickness of the nerve varied widely but in all but 2 the nerve could be found. The operation of evulsion was done in 90, crushing in 2 and alcohol injection in 1.

The phrenic being the only motor nerve of the diaphragm, its interruption is immediately followed by paralysis of the hemidiaphragm. Due to negative intrathoracic tension the paralysed diaphragm rises in the chest and remains almost immobile or shows paradoxical movements. The result is reduction in the size of the hemithorax and relaxation of the pulmonary tissue often leading to closure of cavities. But the paralysis of the diaphragm does not always follow mere section or crushing of the nerve. This is due to the presence of the accessory phrenic which arises from the 5th cervical or the nerve to the subclavius and joins the main trunk 8-10 cm. below the usual site of operation. The question arises where complete evulsion (*i.e.*, pulling out of the nerve from its diaphragmatic attachments) is not possible, how much of it should be removed to ensure complete paralysis of the diaphragm. The general opinion is that at least 10 cm. of the nerve should be removed.

The extent of elevation of the diaphragm cannot be accurately determined by physical signs alone. It can be visualised on the x-ray screen but for comparative study successive skiagrams are essential. Out of 93 cases, such study was possible in 33 cases only. We measured the extent of elevation by taking skiagrams with the same radiographic projections and recording the vertical distance from the topmost part of the diaphragm to the horizontal line drawn across the transverse processes of the first dorsal vertebra. Our results are shown in Table I. In 14 out of 33, the right nerve was operated upon and in 19, the left.

TABLE I—EXTENT OF NERVE EVULSED: ELEVATION OF DIAPHRAGM

Extent of Nerve Evulsed	*No. of cases*	*Poor Elevation*		*Good Elevation*	
		No elevation	Upto 3 cm.	3-5 cm.	Over 5 cm.
Up to 5 cm.	2	Nil	2(100%)	Nil	Nil
5-10 cm.	9	2(22·2%)	4(44·4%)	1(11·2%)	2(22·2%)
Above 10 cm.	11	2(18·2%)	1(9·0%)	4(36·4%)	4(36·4%)
Complete Evulsion ..	8	Nil	2(25·0%)	3(37·5%)	3(37·5%)
Crushing & Alcohol Injection	3	1(33·4%)	2(66·6%)	Nil	Nil
TOTAL ..	33	5	11	8	9

It will be seen from this table that about 75 per cent of good elevations were obtained by removing 10 cm. or more of the nerve thus confirming the general opinion. Complete evulsion did not materially improve this percentage.

Crushing or alcohol injection has not given good results in our hands but our experience of it is extremely limited. During recent years crushing has become the operation of choice. The idea is to cause a temporary paralysis and thus save the patient from the possible evil effects of a permanent injury. When the nerve shows signs of regeneration—and this takes about six months on an average—a second crushing or a permanent evulsion is done if the results would justify.

But apart from somewhat doubtful results of a crush and technical difficulties of a second operation we have to face the fact that most of our patients are averse to operative interference of any kind. Even if the patient improves with a crush operation, probabilities are that he will not turn up in good time for the second operation. Our practice, therefore, has been to evulse the nerve unless there was some definite contraindication like low vital capacity or spreading disease in the contralateral lung.

INDICATIONS

Our cases can be grouped under the following heads according to indications of treatment:—

1. A.P. was indicated and attempted but could not be induced due to adherent pleura; patent cavities .. .. .. 57·8 per cent
2. A.P. successful but obliterative pleurisy set in and the lung re-expanded before complete healing of the lesion could take place 18·9 per cent
3. A.P. produced partial collapse. Healing and closure of cavities being prevented by diaphragmatic adhesions .. .. 8·9 per cent
4. Partial collapse of one lung by A.P. Active disease in the lower zone of the contralateral lung. Phrenic to control contralateral disease .. .. .. 5·6 per cent
5. As an operation of choice in basal and midzone disease .. .. .. 4·4 per cent
6. To control diaphragmatic cough where all other treatment has failed .. .. 2·2 per cent
7. To check recurrent hæmoptysis .. 2·2 per cent

RESULTS OF TREATMENT

Results of treatment have not been considered according to indications because in many cases the phrenic operation was combined with chemotherapy or with other methods of collapse treatment. In these circumstances the real value of the operation can only be assessed by grouping the cases according to combina-

tions of treatment administered. In Table II the cases that had phrenic operation alone can be easily compared with other groups who received a combined treatment. Out of 93 cases, 3 cases have been done very recently and are omitted. The remaining 90 cases have been taken up for consideration.

TABLE II—RESULTS OF TREATMENT

Treatment Groups	*No. of cases*	*Good Results*			*Bad Results*	
		Arrested	Much Improved	Improved	Not Improved	Dead
Phrenic Evulsion alone	32	1 (3·1%)	1 (3·1%)	5 (15·6%)	13 (40·7%)	12 (37·5%)
Ditto plus Chemotherapy (Injection of gold and cadmium salts)	27	4 (14·9%)	8 (29·8%)	7 (25·5%)	4 (14·9%)	4 (14·9%)
Ditto plus A. P. on the same or contra side	19	4 (21·0%)	1 (5·3%)	5 (26·3%)	6 (31·6%)	3 (15·8%)
Ditto plus Pneumoperitoneum	8	1 (12·5%)	—	4 (50%)	2 (25%)	1 (12·5%)
Ditto plus Thoracoplasty	4	1 (25%)	1 (25%)	—	—	2 (50%)
TOTAL ..	90	11 (12·2%)	11 (12·2%)	21 (23·3%)	25 (27·8%)	22 (24·5%)

We shall now simplify Table II for ready reference.

TABLE III—POSITIVE RESULTS

Treatment groups	*Disease arrested per cent.*	*Good results per cent.*
Phrenic Evulsion alone	3·1	21·8
Ditto plus Chemotherapy	14·9	70·2
Ditto plus other methods of collapse therapy	19·4	54·9

From a perusal of Tables II and III, the fact that immediately attracts our attention is the very poor results of phrenic evulsion alone when compared with the results of combined treatment. The percentage of arrested disease was the highest when it was combined with other collapse measures whereas with chemotherapy the "good results" were superior to any other group. These results should not, however, be judged by their face values. In most of these cases our routine was to try A.P. first; when this failed chemotherapy was applied combined in suitable cases with phrenic evulsion. Some of the "Phrenic alone" cases must have been too advanced for gold or cadmium treatment.

CAVITY CLOSURE

For a proper evaluation of the results of any collapse treatment, we must be guided not by general results of treatment but by the following criteria:—
(1) How far it has been able to obliterate the cavities.
(2) How far it has succeeded in converting a T.B. positive sputum into a T.B. negative one. We shall now proceed to analyse our results on the basis of these criteria.

Out of 90 cases, comparison of the size of the cavities on successive skiagrams was only possible in 48 cases. The data of these 48 cases are presented in Tables IV and V.

On an average, the cavities were closed in 16·7 per cent of cases and in exactly the same percentage they actually increased in size. Results were better with moderate and big sized single cavities.

We shall now examine how the effects of phrenic evulsion on cavity closure are influenced by situation of the cavities. As this is based on the study of skiagrams, the cavities have been grouped according to their position in the standard radiographic zones on a postero-anterior film. The upper zone extends upto a horizontal line drawn across the 2nd ribs anteriorly; the mid zone from the 2nd to the 4th and the lower zone below the level of the 4th ribs.

TABLE IV—EFFECT ON CAVITIES ACCORDING TO THEIR SIZE

Size of the cavities	*No. of cases*	*Closed*	*Reduced in size*	*No change*	*Increased in size*
A. SINGLE CAVITIES					
Below 2 cm. in diam. ..	Nil	—	—	—	—
2 to 5 cm. in diam. ..	12	3 (25%)	1 (8·4%)	3 (25%)	5 (41·6%)
Above 5 cm. ..	10	3 (30%)	3 (30%)	3 (30%)	1 (10%)
B. MULTIPLE CAVITIES					
Below 2 cm. in diam. ..	2	—	1 (50%)	1 (50%)	—
2 to 5 cm.	17	1 (5·9%)	6 (35·3%)	9 (52·9%)	1 (5·9%)
Over 5 cm.	7	1 (14·3%)	—	5 (71·4%)	1 (14·3%)
TOTAL ..	48	8 (16·7%)	11 (22·9%)	21 (43·7%)	8 (16·7%)

TABLE V—EFFECT ON CAVITIES ACCORDING TO THEIR SITUATION

Situation of the cavities	*No. of cases*	*Closed*	*Reduced in size*	*No change*	*Increased in size*
Upper zone	1	—	—	—	1 (100%)
Upper and mid zones ..	22	1 (4·5%)	2 (9·1%)	15 (68·2%)	4 (18·2%)
Mid zone	10	1 (10%)	5 (50%)	3 (30%)	1 (10%)
Mid & lower zones ..	6	3 (50%)	1 (16·6%)	2 (33·4%)	—
Lower zones	9	3 (33·3%)	3 (33·3%)	1 (11·2%)	2 (22·2%)
TOTAL ..	48	8 (16·7%)	11 (22·9%)	21 (43·7%)	8 (16·7%)

In 45 per cent of our cases the cavities occupied the upper and middle zones. Although this is the largest single group, the results obtained have been very poor, the cavities having closed in 4·5 per cent only and became smaller in 9·1 per cent. In 18·2 per cent they actually increased in size. (Figs. 1A and B).

The best results were obtained where cavities existed in the middle and lower zones, 50 per cent of these cases showing cavity closure. (Figs. 2A and B).

Cavities in the lower zone (basal cavities) closed in 33·3 per cent and became smaller in the same number of cases. (Figs. 3A and B).

How can we explain this discrepancy in the effects produced on cavities at different situations? The hemithorax is cone-shaped and the diaphragm occupies the base of the cone. The relaxation produced by paralysis of the diaphragm should under normal circumstances spread up to the extreme apex. Had phrenic operations

LEGENDS FOR FIGURES

FIG. 1A—Before phrenic evulsion. One cavity at the right apex. FIG. 1B—After phrenic evulsion. Inspite of elevation of the diaphragm, the apical cavity has become much bigger in size. FIG. 2A—Before phrenic evulsion. Basal lesion (right). FIG. 2B—After phrenic evulsion. Good elevation of the diaphragm with disappearance of lesion. FIG. 3A—Before phrenic evulsion. One big cavity at the left base. FIG. 3B—After phrenic evulsion. Good elevation of the diaphragm with disappearance of the cavity.

been done for minimal lesions, marked improvement would probably have followed even in the apical zones. But for such cases A.P. is our method of choice. The phrenic operations in our series have been done on cases whose pleural layers were thick and adherent throughout. In some cases the interlobar septum formed a thick barrier across the lung. The movements of the diaphragm were already restricted before operation. In cases like this, paralysis of the diaphragm could not possibly produce much effect in the upper regions.

Another interesting factor which emerges from the two foregoing tables is the actual increase in size of the cavities in 16·7 per cent of cases. This was observed in all zones and cavities of all sizes even with a fairly good elevation of the diaphragm. The reason to our mind appears to be as follows:

Paralysis of the diaphragm can only produce relaxation and not compression of the lung tissue. Shrinkage of the lung and closure of cavities occur by virtue of retraction of elastic fibres. If there is too much exudation running on to consolidation, the power of this elastic recoil is lost. Paralysis of the diaphragm in a case like this will only cause shrinkage of the healthy tissue and possibly displacement of the mediastinum. The actual seat of lesion will, in the usual course of evolution, throw out of the caseous materials thus increasing the size of the cavity. In our series of 48 cases, cavities increased in size in 8 cases. In 5 out of these 8 cases (62·5 per cent) the cavity was surrounded by a zone of consolidation. As against this the incidence of consolidation around the cavity in the whole series was 25 per cent.

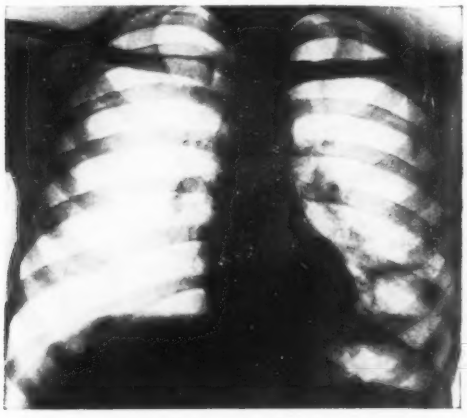


FIG. 3A.

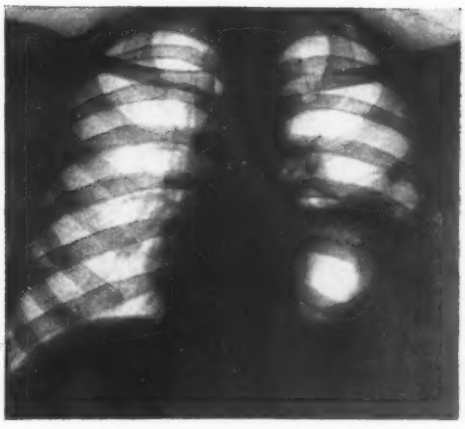


FIG. 3B.

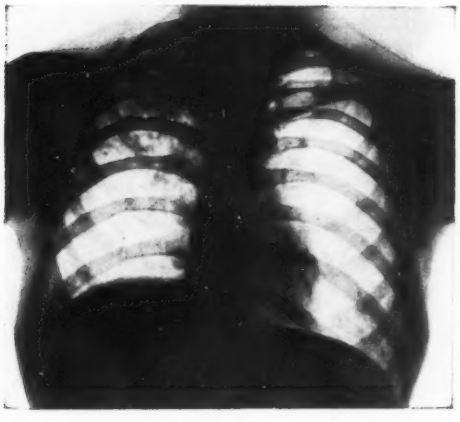


FIG. 1A.

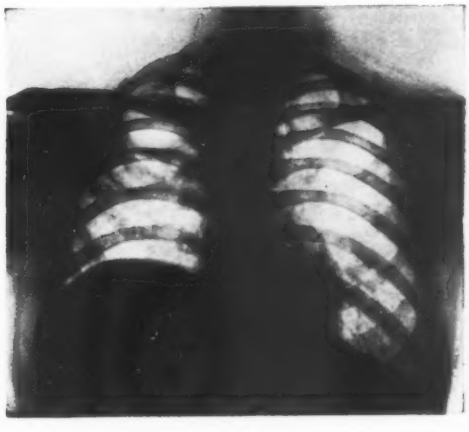


FIG. 1B.

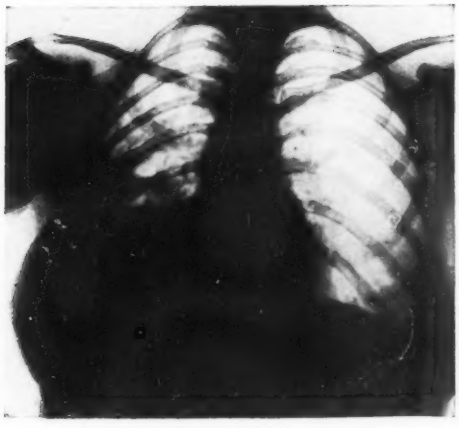


FIG. 2A.

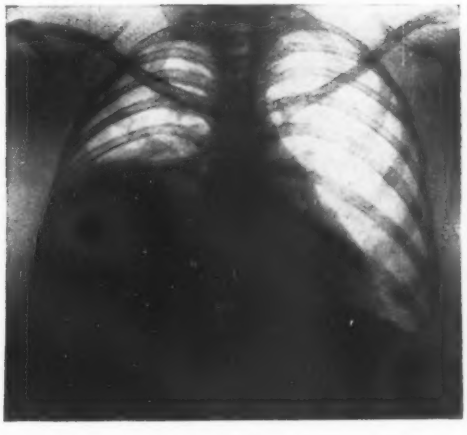


FIG. 2B.

Engraved & printed by
The Bengal Autotype Co., Cal.

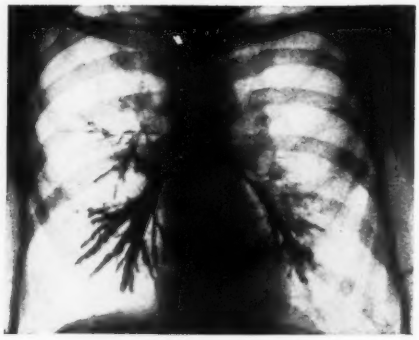


FIG. 1—Lipiodol skiagraph showing bilateral fusiform and mixed variety.

MISRA—*More Observations on Bronchiectasis.*

FIG. 2—Lipiodol skiagraph showing a few small dilatations.

MISRA—*More Observations on Bronchiectasis.*

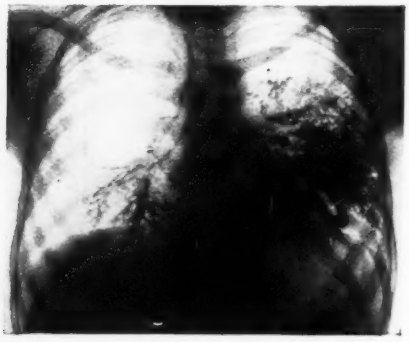


FIG. 3—Lipiodol skiagraph showing saccular dilatation.

MISRA—*More Observations on Bronchiectasis.*

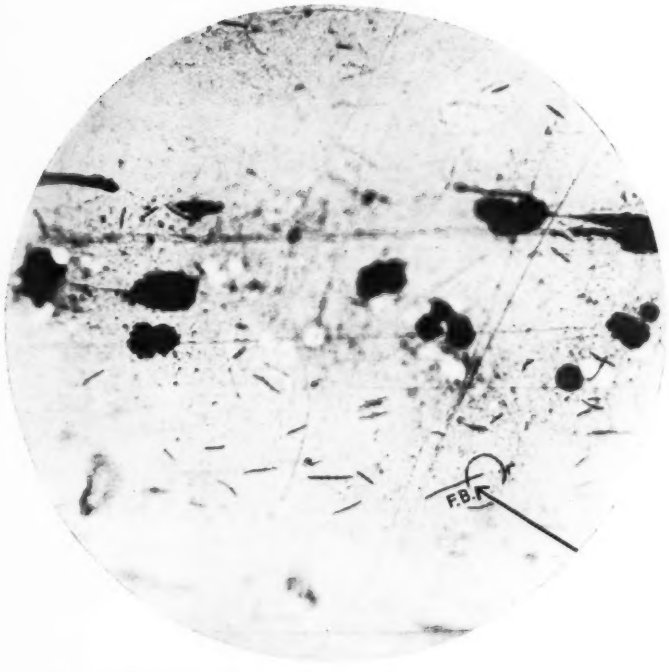


FIG. 4—Microphotograph of the smear of the ulcer (Geimsa's stain) showing many fusiform bacilli (F.B.) and pus cells.

BOSE—*A case of chronic ulcer treated with leadplate.*

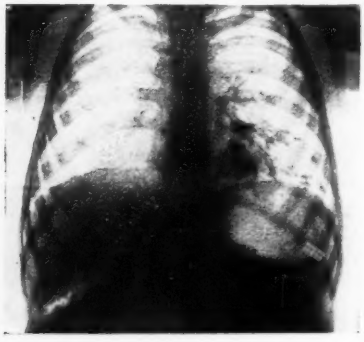


FIG. 5—Lipiodol skiagraph showing cylindrical variety.

MISRA—*More Observations on Bronchiectasis.*

Sputum Conversion

From a public health stand-point the success of a collapse treatment is judged by its ability to convert a positive spit into a negative one. Let us examine to what extent the phrenic operations in our series satisfy this standard.

Table VI—Effect on Tubercle Bacilli in Sputum

Treatment of groups	*No. of open cases*	*Sputum rendered T. B. Negative*
Phrenic evulsion alone ..	30	3 (10%)
Phrenic combined with other collapse measures or chemotherapy	64	20 (31·2%)

Here again only 10 per cent of cases treated with phrenic evulsion alone lost their bacilli in sputum as against 31·2 per cent of those who received combined treatment.

Right Sided and Left Sided Operation

A comparative study was made of the right and left sided operations. In our series of 90 cases the right nerve was done in 46 and the left in 44 cases. As different figures are involved under the different heads considered in the table below, the results have been expressed in percentage only.

Table VII—Comparative Study of the Right and Left Sided Phrenic Operations

Side of operation	*Disease arrested*	*Positive results*	*Good elevation of the diaphragm*	*Cavity closed*
Right ..	7·8%	23·3%	24·3%	10·4%
Left ..	4·4%	24·4%	27·3%	6·3%

The results of right sided operation were somewhat better judging by the percentage of cavity closure and arrested disease but it would not be wise to draw any conclusions from such a small number of cases.

Complications

Phrenic operations are comparatively safe and simple and the cases generally make uneventful recovery. Serious complications during the operation like cutting the vagus or injuring the big veins of the neck have been mentioned in literature but their occurrence must be extremely rare. Post-operative complications are also few. 2 out of 93 cases in our series died within 6 weeks of operation—one from massive pneumonia on the operated side due possibly to inability of expelling the secretions and the other from cardiac exhaustion although there was no evidence of decompensation before. One patient lost her voice immediately after the operation but as she left the hospital soon after, we do not know if it was only temporary. A fourth patient developed such severe dyspnœa that she had to remain sitting up in bed for 3 weeks. At the time of discharge the cavity had closed and she was walking about. The interesting fact is that 3 out of 4 patients who developed complications were women.

Conclusion

Where collapse is indicated for pulmonary tuberculosis, A.P. is our method of choice except in a small group of cases where the disease is strictly basal and involves only a small area. Phrenic evulsion is reserved for cases where A.P. has failed. Due to pleural adhesions and bands, the beneficial effects of diaphragmatic paralysis cannot be exerted to the fullest extent in this group of cases. Bearing these facts in mind we may draw the following conclusions:

(1) That unaided phrenic evulsion is of little utility. It effected arrest of disease in 3·1 per cent and negative sputum in 10 per cent of cases only.

(2) When combined with chemotherapy "good results" were obtained in 70 per cent and arrest of disease in 14·9 per cent.

(3) That the percentage of arrested disease was the highest (21·0 per cent) when phrenic evulsion was used to supplement pneumothorax treatment. In suitable cases it is, therefore, a valuable adjunct to A.P. treatment.

(4) In 16·7 per cent cavities were closed and in 22·9 per cent reduced in size by phrenic evulsion combined with other treatments. The best effects were observed on cavities occupying mid and lower zones.

(5) In another 16·7 per cent the cavities actually increased in size. 62·5 per cent of these cavities were surrounded by a zone of consolidation.

A STUDY OF THE ACTION OF PROTAMINE ZINC INSULIN AND SUGGESTIONS ON ITS USE IN THE TREATMENT OF DIABETES MELLITUS

P. KRISHNA RAO, B.SC., M.B.B.S., D.T.M. & H. (ENG.),
Pathologist, Victoria Hospital, Bangalore,
S. ANANTHASWAMY, M.B.B.S., B.SC.,
AND
B. K. RAMANNA, M.B.B.S.
Diabetic Clinic, Victoria Hospital, Bangalore.

INTRODUCTION

It is five years since Hagedorn and his co-workers (1936) completed the investigations on the use of protamine insulinate, a compound of insulin and a mono-protamine derived from the sperm of a fish, a species of trout. They showed clinically that the effect of the protamine insulinate was "more prolonged—roughly about twice as long as that of ordinary insulin." Root, White, Marble and Stortz (1936) confirmed the observations of Hagedorn by using protamine insulin on fifteen patients. Lawrence and Archer (1936) studied the action of this insulin and came to the conclusion that protamine insulin acted more slowly and for a longer period than ordinary insulin and a large dose could act for more than two days. Sprague and his co-workers (1936), Allen (1936), Nader and Isaac (1937), and Joslin (1937) also confirmed the original observations of Hagedorn regarding the prolonged action of protamine insulin.

Research work was being carried out on insulin in a different direction also. Scott and Fisher (1935) showed that zinc was present in larger quantities in the pancreas and all commercial insulin preparations contained zinc. Moreover, they found out that this metal facilitated the crystallization of insulin more readily than nickel, cobalt or cadmium. They also showed by animal experimentation that the addition of 0·1 per cent of zinc chloride to an insulin solution greatly delayed the physiological action of the insulin and the level of blood sugar remained considerably below normal for 10 hours after commencing the test.

Freund and Adler (1936) used an improved insulin called "crystalline insulin", a crystalline extract prepared from the pancreas, and compared the action of this with that of protamine insulin. They came to the conclusion that the onset of action of the crystalline insulin was more rapid and the duration of its effect on blood sugar was shorter than that of protamine insulin. Mains and McMullen (1936) also used 'crystalline insulin' and arrived at the conclusion that one large dose of this type of insulin would adequately control blood sugar of patients requiring two or more doses of regular insulin daily.

Robinowitch, Foster, Fowler and Corcoran (1936) analyzed the crystalline insulin and found that it contained 0·73 mg. of zinc per 500 units and by adding a small quantity of extra zinc they were able to duplicate the clinical effects of crystalline insulin. These experiments suggested to the authors to use a combination of both zinc and protamine and they found that "protamine-zinc insulin" was much superior to any other preparation. Myers and Perkin (1937) made a comparative study of the action of the 4 types of insulin and found that "hypoglycæmic effect of protamine insulin was considerably greater than that of crystalline or regular insulin and the results with that of zinc-protamine insulin were much superior to those with any of the other preparations."

A long experience of 10 years with the diabetic patients in the Mysore State (perhaps it is the experience of others in most parts of India also) has shown the senior author that most of the patients do not take more than one injection of even the ordinary insulin per day, partly on account of reluctance to have more pricks and partly for want of facility to get a doctor to give the second injection, as these patients never take the injections by themselves. The introduction of protamine-zinc-insulin into this part of India has been recent and there is not enough literature available to guide the patients regarding the treatment with this new insulin. Moreover, the nature of food, hour of meal and the habits of Indians are different from those in the West. It was, therefore, found necessary to carry out some investigation regarding the action of the new insulin on our diabetic patients, with a view to find out a single large dose of insulin that could be given with impunity and also the time at which that injection had to be given. Thanks to the co-operation of the patients who willingly submitted to these prolonged and tedious tests—it was possible to conduct the investigation on seven diabetic patients in all.

Method of Investigation

First Series:

(1) Fasting blood sugar of the patient was estimated at first in the morning. (2) An appropriate dose of protamine zinc insulin was injected, and a small meal (400 calories) was given. (3) Blood sugars were estimated at intervals of one hour for a period of 5 to 6 hours. The patient was given lunch (1,000 calories) either between 10-30 and 11-30 a.m., or 12 noon and 1 p.m. (4) Patient was allowed to have dinner at 8 p.m. (600 calories). (5) Sample of urine voided the next morning, was examined for the presence of sugar, and wherever possible, fasting blood sugar was also estimated.

(In all these cases the patients were given such kind of food as they were accustomed to eat everyday).

Second Series:

The investigation was conducted 3 or 4 days later in a similar manner on 3 of the same patients, but substituting ordinary insulin to protamine zinc insulin.

Third Series:

A further investigation was conducted on similar lines on two of the same patients by giving injections of ordinary and protamine zinc insulins simultaneously.

Technique

MacLean's method of estimating blood sugar was adopted and the results were checked by using Zeiss colorimeter.

Blood Sugar Tables

Blood sugar values are given in mgms. per 100 c.c. of blood.

Case 1	Insulin	Dosage	Fasting 10-30 A.M.	11-30 A.M.	12-30 P.M.	1-30 P.M.	3-30 P.M.	4-30 P.M.	Night	Next Morning
Hindu Male, 28 years	Protamine Zinc Insulin	40 Units at 10-30 A.M.	400 Light breakfast	550	510 I Meal	440	380	350	II Meal	Urine Sugar nil
	Ordinary Insulin	40 Units at 10-30 A.M.	450 Light breakfast	370	300 I Meal	395	445	..	II Meal	Urine Sugar 5%
	Protamine Zinc Insulin + Ordinary Insulin	20 Units + 20 Units	452 Light breakfast	460	350 I Meal	350	..	300	II Meal	Urine Sugar nil

Note: Protamine Zinc Insulin began to act in the 2nd hour after the injection.

Case 2	Insulin	Dosage	Fasting 8-45 A.M.	9-45 A.M.	10-45 A.M.	11-45 A.M.	12 Noon	1-45 P.M.	4-45 P.M.	Night	Next Morning
Hindu Male, 40 years	Protamine Zinc Insulin	40 Units at 8-45 A.M.	230 Light breakfast	300	..	290	I Meal	260	240	II Meal	Urine Sugar nil
	Ordinary Insulin	40 Units	210 Light breakfast	190	240	240	I Meal	..	250	II Meal	Urine Sugar 3%
	Protamine Zinc Insulin + Ordinary Insulin	20 Units + 20 Units	280 Light breakfast	300	320	260	I Meal	250	240	II Meal	Urine Sugar nil

Note: Protamine Zinc Insulin began to act 2 hours after the injection. In both cases, I Meal did not increase the blood sugar.

Case 3	Insulin	Dose	Fasting 11 A.M.	12 Noon	2 P.M.	3 P.M.	4 P.M.	5 P.M.	Night	Next Morning
Mahomedan Male, 45 years	Protamine Zinc Insulin	40 Units at 12 Noon	230	I Meal Usual Food	355	325	275	250	II Meal Usual Food	Urine Sugar nil

Note: Protamine Zinc Insulin began to act 3 hours after the injection.

Case 4	Insulin	Dose	Fasting 11 A.M.	12 Noon	2 P.M.	3 P.M.	4 P.M.	5 P.M.	Night	Next Morning
Hindu Male, 48 years	Protamine Zinc Insulin	40 Units at 12 Noon	300	I Meal	375	350	275	250	II Meal	Urine Sugar nil

Note: Protamine Zinc Insulin began to act 3 hours after the injection.

Case 5	Insulin	Dose	Fasting 8 A.M.	11 A.M.	12 Noon	1 P.M.	4 P.M.	6 P.M.	Night	Next Morning.
Hindu Male, 48 years	Protamine Zinc Insulin	40 Units at 9 A.M. Light breakfast.	206	365	I Meal	201 I Meal	181	162	II Meal	Urine Sugar nil
Urine Sugar			1·75%	3%	..	5%	3%	2·5%	..	..

Note: Protamine Zinc Insulin began to act 3 hours after the injection.

Case 6	Insulin	Dose	Fasting 8-30 A.M.	10-30 A.M.	11-30 A.M.	12-30 A.M.	2-30 P.M.	4 30 P.M.	Night	Next Morning.
Christian Male, 50 years	Protamine Zinc Insulin	40 Units	237	262	248	239	191	141 2 oz. of Bread & Glucose were given at this stage.	II Meal 8 P.M.	
Urine Sugar			3%	4%	5%	3%	3%	1%		Traces

Note: Protamine Zinc Insulin began to act 2 hours after the injection.

Case 7	Insulin	Fasting 8 A.M.	9 A.M.	10 A.M.	11 A.M.	12 NOON	1 P.M.	3 P.M.	5 P.M.	Night	Next Morning Fasting.
Mahomedan Male, 49 years*	Protamine Zinc Insulin 40 Units. 8 A.M. Light breakfast.	374	412	396	368	420	401	397	292	Usual Meal 8 P.M.	Blood Sugar 272
Urine Sugar		5%	3%	7%	7%	10%	14%	6%	7%	..	4%
Acetone Bodies		+	++	+	+	++	++	+	+	..	nil

Note: Protamine Zinc Insulin acted in the second hour after the injection.

* This patient took injections of 40 units of Protamine Zinc Insulin, once a day for 15 days, and on the 16th day fasting blood sugar was 201 mgms. and the urine sugar, traces.

One month later fasting blood sugar came down to 137 mgms. and the urine sugar was nil. At this state the dosage of insulin was reduced to 30 units a day and a fortnight later the fasting blood sugar was 122 mgms.

(*Note*: There was indication to give more than 40 units a day, in the beginning; but 40 units were prescribed as the patient had to go out of Bangalore and live in a mofussil station for some time.)

Comment

A study of the above charts indicates that the protamine zinc insulin begins to act from about 2 to 3 hours after the injection and remains effective for nearly 24 hours or even more as could be evinced by the absence of sugar in the urine voided on the next day following the test in the first 6 cases and the diminution of the fasting blood sugar in the 7th case. In all these patients the second and the night meal have not increased the blood sugar level showing that once the action of this insulin starts, it remains steady and prolonged for a long time. Another factor that could be noticed is that a lesser quantity of the new insulin produces better results than the ordinary insulin. For example, Case 1, required only 40 units of protamine zinc insulin to render the urine sugar free the next morning, whereas the same quantity of ordinary insulin did not control hyperglycæmia and the urine contained 5 per cent sugar the following morning. The patient required perhaps another 40 units of ordinary insulin the same evening to reduce the blood sugar. Even 20 units of protamine insulin when given simultaneously with 20 units of ordinary insulin brought about the desired hypoglycæmic effect on the same patient showing that a smaller quantity of protamine zinc insulin is far more effective than twice the amount of ordinary insulin.

The Time of Injection of Protamine Zinc Insulin

The hours of work, time and nature of food and the general habits of the people form the important criteria in guiding the diabetic patients to adjust the time and dosage of the injection. It is of great importance that the time selected should be such as not to interfere with their hours of work and also not to bring about hypoglycæmic conditions at odd hours especially from the point of view that our patients like to take one single large dose of injection per day.

Apart from being either vegetarians or non-vegetarians, the diabetics in the Mysore State, for example, (perhaps as is the case in the rest of India also) could be grouped under two broad categories so far as their time of food and hours of work are concerned. Persons such as officials, teachers, lawyers, etc., who attend to their duties between 11 a.m. and 5 p.m. are of one group (hereafter called Group I) and the others such as merchants, doctors, engineers and other business people who are busy with their professional work between 8 a.m. and 12 noon and again from 3 p.m. up to 8 or 9 o'clock in the night, are of another group (Group II).

Group I take their first meal at about 10 o'clock in the morning and the second one at about 8 in the night; whereas the Group II take their first meal at about 1 p.m. and the second meal between 9 and 10 p.m. The former usually have only a cup of coffee or tea early in the morning; and the latter take light breakfast (chota) at about 8 a.m. The majority of the people belonging to both the groups take coffee or tea in the afternoon.

So far as the general habits of diabetics are concerned, it may be stated that most people of Group I usually take some kind of physical exercise, such as playing either tennis or golf between 5 and 7 p.m., or walking long distances. Very few are of sedentary habit. Some people of Group II indulge in exercise of the kind mentioned above, and a few others get sufficient exercise on account of the nature of their work and most of them are of sedentary habit.

The following plan has been offered to serve as a guide in the treatment of diabetes with protamine zinc insulin:

For Group I:

Injection of protamine zinc insulin				10-00 a.m.
First meal				10-30 a.m.
Light refreshment	between	2-00	&	3-00 p.m.
Night meal	between	7-30	&	8-00 p.m.

(Coffee or tea, without sugar, early in the morning, optional).

For Group II:

Injection of protamine zinc insulin				8-00 a.m.
Breakfast (Chota)				8-00 a.m.
First meal	between	12 noon	&	1-00 p.m.
Tea or coffee				4-00 p.m.
Night meal	between	8-30	&	9-00 p.m.

In the case of persons who take the injection at 10 a.m., the insulin begins to act at about 1 p.m. and subsequently there will be a gradual fall of blood sugar. In order to prevent too low a hypoglycæmic condition, light refreshment in the afternoon, especially if they are taking any physical exercise, is recommended. In the case of persons that take the injection at 8 a.m., the insulin begins to act by about

11 a.m., and the meal taken at 1 p.m., will prevent a rapid fall of blood sugar. Light refreshment in the afternoon, is a matter of choice and the patients should adjust according to the nature of their work and whether they are taking vigorous physical exercise or not.

Dosage of Insulin

The dosage of insulin is another factor that should receive the careful attention of the doctor and the patient. In cases of confirmed diabetes mellitus, the quantity of insulin required to keep the urine sugar free in the morning sample, is to be determined in the beginning of the treatment. We agree with Lawrence (1939) who thinks it "a waste of time to give adults such small initial doses at 5 to 10 units (recommended by some writers) to be increased slowly later. The first dose does not show its full effect for two or four days, as the action is slow and partly cumulative." The determination of at least the fasting blood sugar level, wherever a complete sugar tolerance test is not possible, is essential to estimate the basic dose of insulin required to start with. For example in a case of diabetes where the urine sugar is between 2 and 3 per cent and the fasting blood sugar is above 200 mgms. per cent, 30 units of protamine zinc insulin are given as the initial dose. If the urine voided the next morning contains sugar, the dose of insulin is increased by 5 or 10 units. Some patients may require more than 30 units a day and in such cases there should be no hesitation to give 40 to 50 units of protamine zinc insulin in a single dose. The quantity of insulin that keeps the urine sugar free for 3 days consecutively in the mornings (with normal diet) is to be considered as the basic dose for that particular patient. It is easy to determine this basic dose, in the course of 3 or 4 days after the commencement of the treatment, and the daily variation in further treatment should be with reference to this basic dose. The guiding factor for the small daily variation, is the presence or absence of sugar in the morning sample of urine. The best plan is to test two samples of urine, as suggested by Lawrence (1939), the first sample being the one voided just after waking up and the second one being that passed an hour or two later, *i.e.*, just before breakfast. If the first sample contains sugar and not the second one, the inference is that at least between the time interval of passing the two samples of urine, the blood sugar was below the renal threshold; on the other hand if both the samples contain sugar, the indication is that even before breakfast the blood sugar was above the renal threshold. In the latter case a small increase in the dosage of insulin injected for the day, is indicated. It is suggested that the basic dose of insulin should be kept up for at least 3 to 4 weeks, after the commencement of the treatment, even though the morning sample of urine is sugar free. It is much better to take a proper dose of insulin and normal amount of food required rather than to reduce the insulin and to cut down the quantity of food considerably. Later on, the reduction in the dosage of insulin is to be gradually brought about, *e.g.*, from 30 to 25, 25 to 20, 20 to 15 and 15 to 10 units and so on. At least once a fortnight the fasting blood sugar must be estimated in order to serve as a guide to reduce or increase the quantity of insulin.

Severe Diabetes and Protamine Zinc Insulin

Cases of diabetes where fasting blood sugar is more than 300 mgms. per cent, are often met with and in such conditions injections of both ordinary and protamine zinc insulin are of great value (*vide* Charts 1 and 2). The quick action of ordinary insulin will prevent too high an increase of blood sugar just after food, and the slow and steady action of the protamine zinc insulin will produce the desired hypoglycæmic condition.

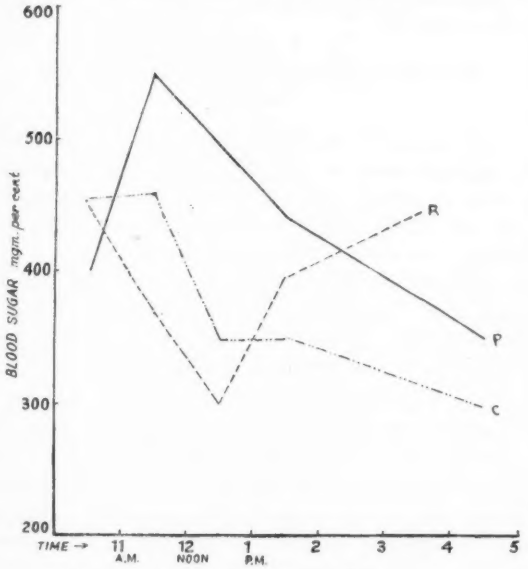


Chart 1—Blood Sugar Curves

P—after protamine zinc insulin. R—after ordinary insulin. C—after combined protamine zinc insulin and ordinary insulin.

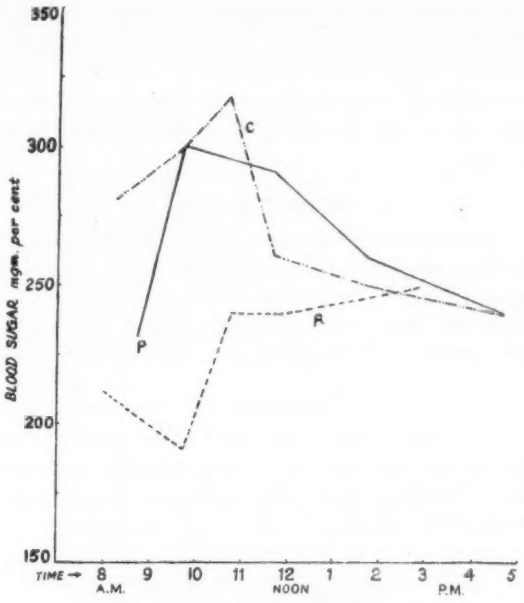


CHART 2—Blood Sugar Curves

P—after protamine zinc insulin. R—after ordinary insulin. C—after combined protamine zinc insulin and ordinary insulin.

DIABETIC COMA

It may not be out of place to mention that protamine zinc insulin alone should not be used to combat diabetic coma. Ordinary insulin should be used at first as liberally as the condition of the patient demands to combat coma, and subsequently protamine zinc insulin may be used to prevent sudden relapse of the comatic condition.

SUMMARY

(1) The action of protamine zinc insulin has been studied on seven diabetic patients after giving them the usual food that they are accustomed to have.

(2) Protamine zinc insulin begins to act from 2 to 3 hours after the injection and its effect continues to be present for 20 hours or more.

(3) Protamine zinc insulin not only reduces the number of injections required per day but also the quantity compared with ordinary insulin.

(4) The time and dosage of protamine zinc insulin to be resorted to by diabetic patients have been suggested from the point of view that only one injection is taken per day.

[Concluded at foot of next column]

SEVEN DAYS FEVER (?)

BHUPAL SINGH, B.A., M.B.,
Meerut

In Meerut this year, during September, October and November, we noticed a certain number of cases which began very acutely with high temperature, severe headache and general pains all over the body specially, the calves and the back. The fever was of a continued type or saddle back type and came down on the 5th, 6th or the 7th day. The pulse was unusually slow in relation to the temperature.

My object in bringing some of these cases, about whom I could keep a brief record, to your notice is not to give a scientific discourse on 'Seven Day Fever' as, unfortunately, I have not had the opportunity to study them scientifically, but only to put these cases before you as definite clinical entities.

ÆTIOLOGY

In Rogers' book on Fevers in the Tropics, published in 1908, I find a very detailed description of

[Continued from previous column]

(5) A comparative action of ordinary and protamine insulin and the effect of the combination of the two types of insulins have also been studied in a few cases.

ACKNOWLEDGMENT

We offer our grateful thanks to the Medical Officer in charge of the Victoria Hospital, for giving us the facilities required to conduct these investigations.

REFERENCES

ALLEN, F. M. (1936)—*J.A.M.A.*, 107:430.
FREUND, H. A., AND ADLER, S. (1936)—*Ibid.*, 107:577.
HAGEDORN, H. C., JENSEN, B. N., KRARUP, N. B., AND WODSTRUP, I. (1936)—*Ibid*, 160:177.
JOSLIN, E. P. (1937)—The Treatment of Diabetes Mellitus. p. 316.
LAWRENCE AND ARCHER, N. (1936)—*Brit. M. J.*, 1:749
LAWRENCE, R. D. (1939)—*Ibid.*, 1:1077.
MAINS, M. P., AND MCMULLEN, C. J. (1936)—*J.A.M.A.*, 107:1936.
MYERS G. B., AND PERKIN, F. S. (1937)—*J. Lab & Clin. Med.*, 23:8
NADLER, W. H., AND ISAAC, B. L. (1937)—*Ibid.*, 23: 250.
ROOT, H. F., WHITE, MARBLE AND STOTZ (1936)—*J.A.M.A.*, 106:180.
ROBINOWITCH, I. M., FOSLER, J. S., FOWLER, A. F. AND CORCORAN, A. C. (1936) Quoted by MYERS, G. B. AND PERKIN, F. S. *Canad. M.A.J.*, 35:239.
SCOTT, D. A., AND FISHER, A. M. (1935)—*J. Pharmacol. & Exper. Therap.*, 55:206.

Seven Day Fever as noticed in summer months. Rogers thought it was due to a bacillus allied to the coli group which he isolated from the blood and which he thought was the causative agent but his observations have not been confirmed. Rogers put Seven Day Fever under the head 'Unclassified Short Fevers'. Megaw, on the other hand, thought these were typical cases of dengue.

In Manson's Tropical Diseases is described a Seven Day Fever of Japan called 'Sukusku' which is caused by a leptospira (Leptospira hebdomadis) which was discovered in 1941. Sukusku is also prevalent in summer months. The field mouse is the normal host of the leptospira. The fever is said to be transmitted by the bite of the field mice. The main symptoms of Sukusku are identical with the Seven Day Fever as described by Rogers or as met with in the epidemic in Meerut. But the fever in Japan is associated with slight leucocytosis while Rogers found leucopenia and in the few cases in which we got the blood examined we also found leucopenia. They also describe enlargement of the lymphatic glands in Sukusku which was absent in our cases. I read about the Seven Day Fever of Japan when the epidemic in Meerut had worn off, otherwise, I would have got the urine examined in these cases for the leptospira.

There were two cases in one family, two in another and three cases in a third family, about the same time or followed each other in quick succession as we get in an epidemic of influenza.

Clinical Picture

The disease begins acutely with a chill in some cases. There is severe headache and severe pain all over the body, specially the calves and the back. The general appearance of the patient is dull and listless. The face may be flushed and the conjunctivæ are as a rule congested. The tongue is badly coated in the centre but the edges are clean and red and resemble the typhoid tongue. The throat is slightly congested but the acute catarrhal condition met with in influenza is absent. The pulse is unusually slow in relation to the temperature. The abdomen is slightly distended and the liver may be palpable and at times slightly tender. There is, as a rule, nausea and vomiting and in some cases there is diarrhœa. There is no enlargement of the spleen. The lungs do not show any congestion. The urine is high coloured and in one of my cases there was albumen which quickly cleared up after the fever subsided. The nervous symptoms in some of my cases were marked. Delirium sometime violent and at other times of a low muttering type was noticed in a few cases.

Blood Picture

Unfortunately, I have not had the facility of getting the blood examined except in a few of my cases. In these we found leucopenia with lymphocytosis. In Japan they have observed leucocytosis. No spirilla were noticed in the blood of any of these cases.

Temperature

Here are shown a few charts of my cases. Some show a peculiar saddle-back type, others a continued type. The temperature falls quickly to normal or subnormal and after that the recovery is uneventful.

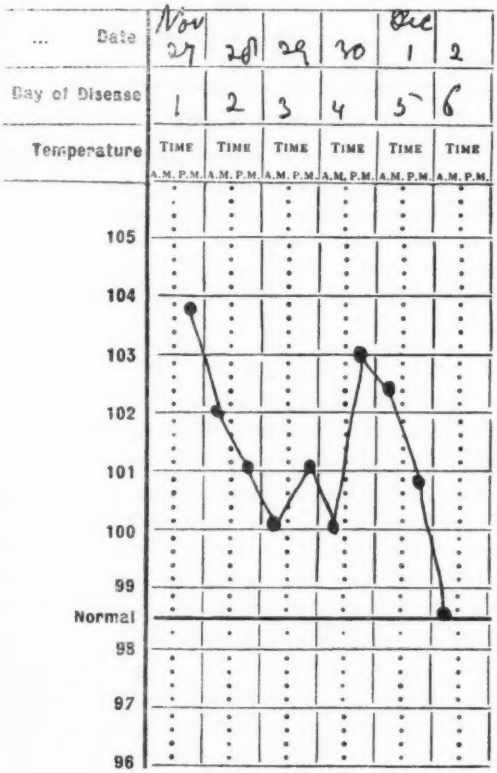


Chart 1

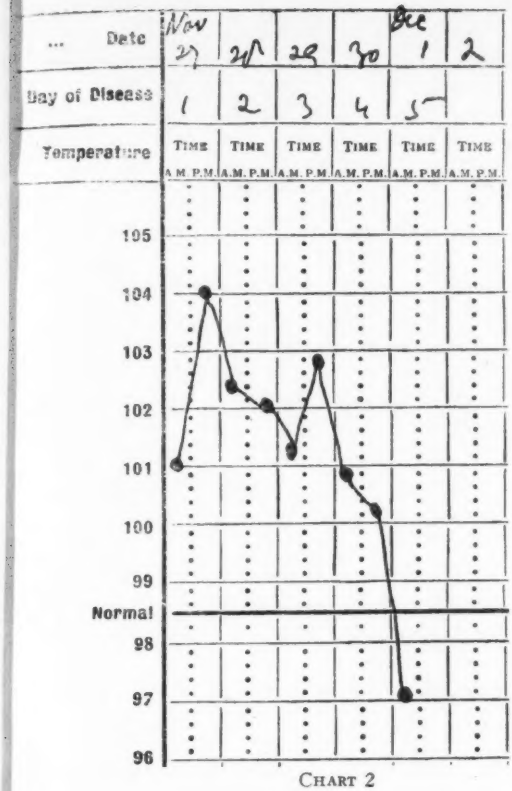


CHART 2

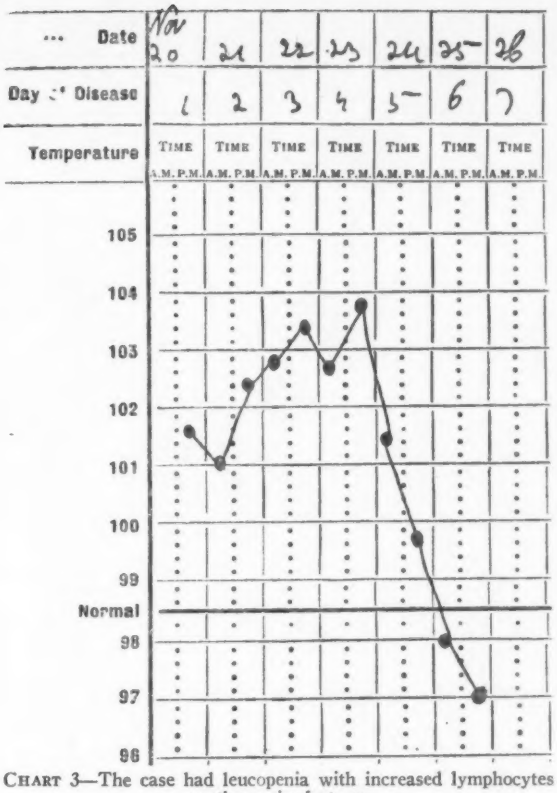


CHART 3—The case had leucopenia with increased lymphocytes as the main feature.

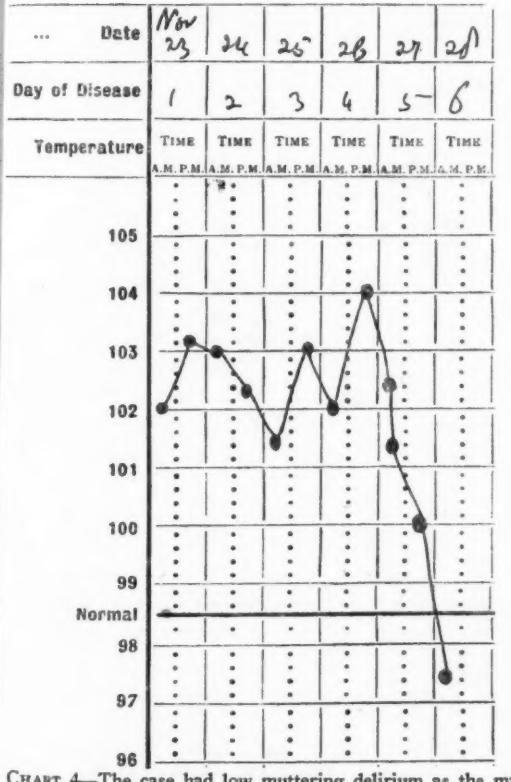


CHART 4—The case had low muttering delirium as the main feature.

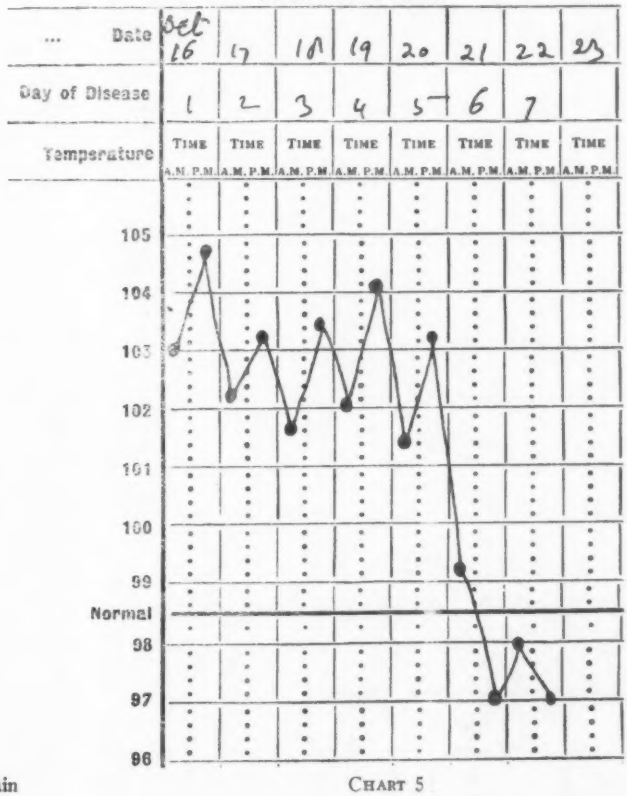


CHART 5

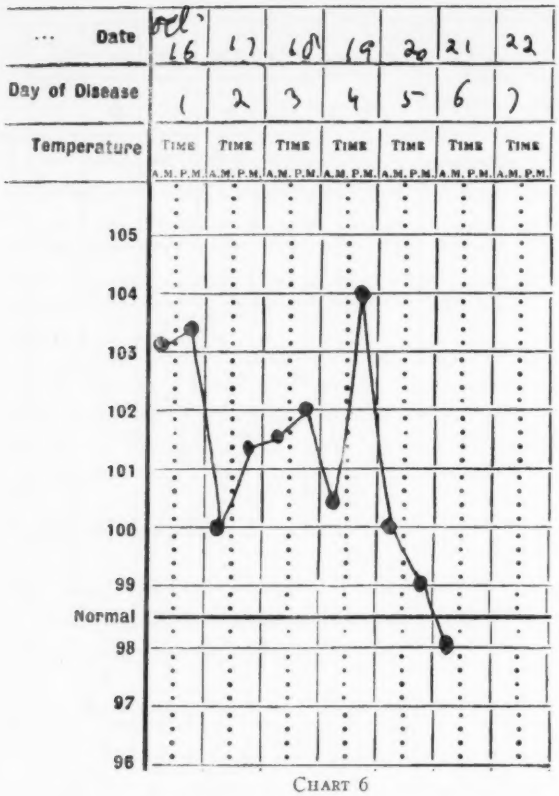


CHART 6

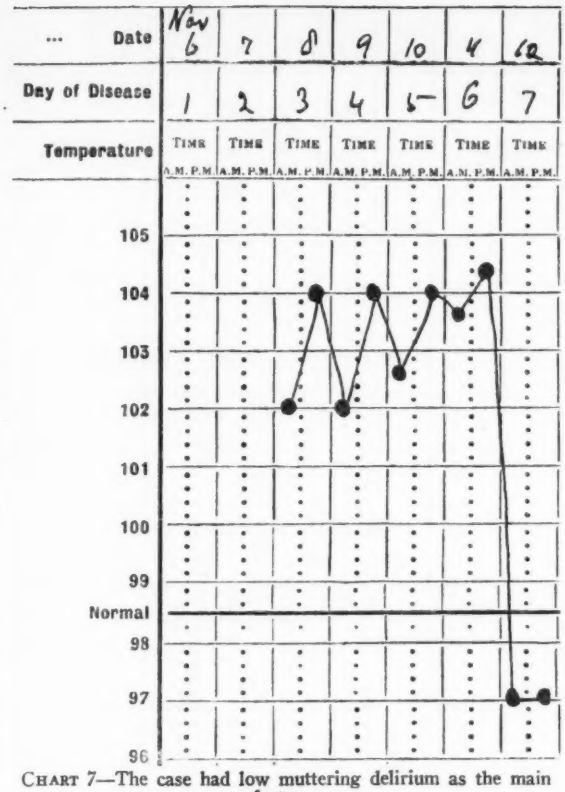


CHART 7—The case had low muttering delirium as the main feature.

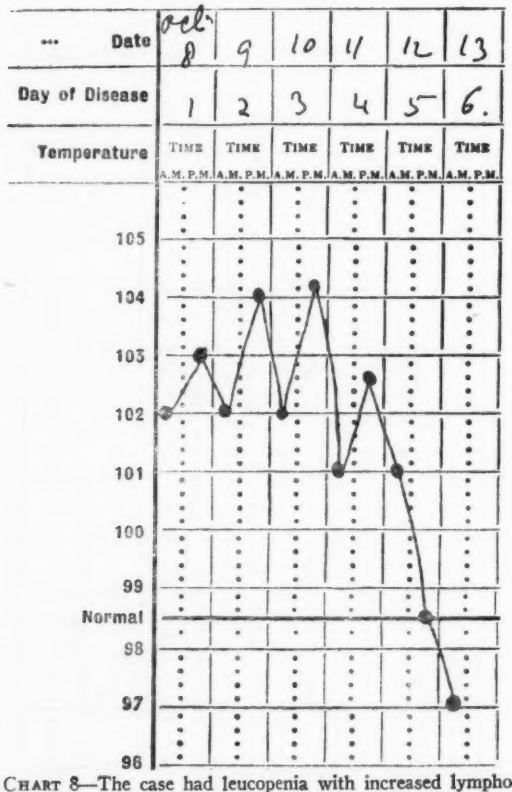


CHART 8—The case had leucopenia with increased lymphocytes and dull, listless appearance as the main features.

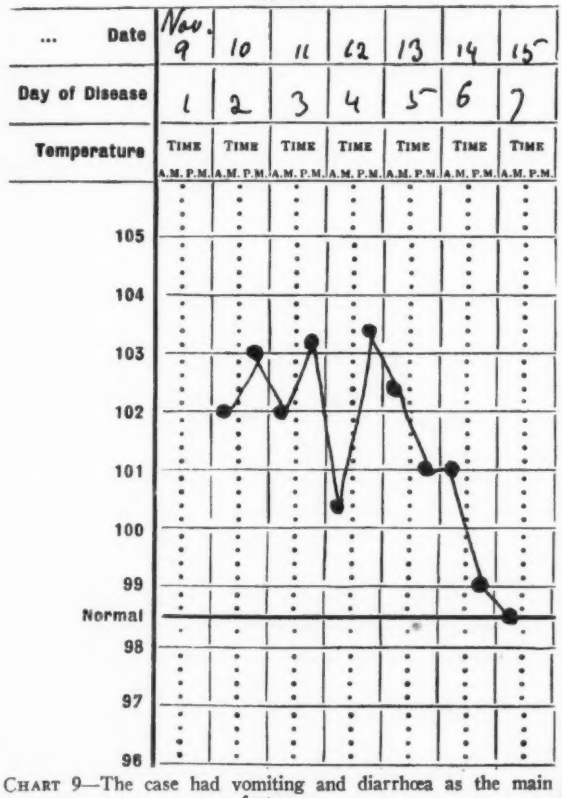


CHART 9—The case had vomiting and diarrhœa as the main features.

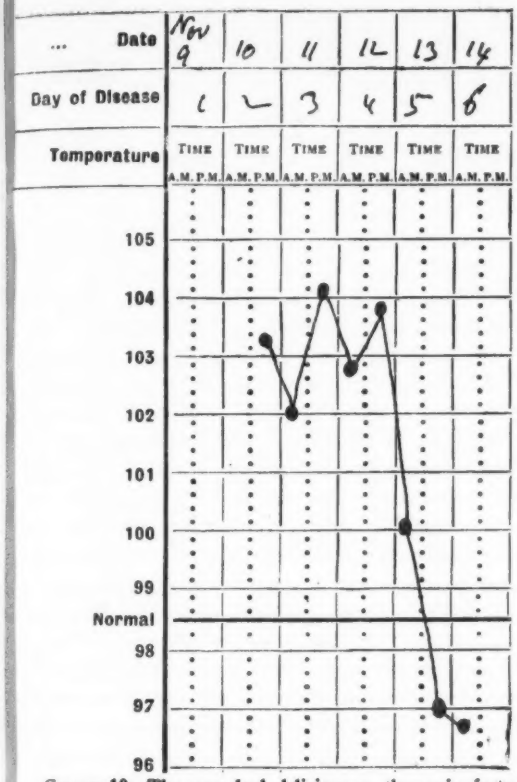


CHART 10—The case had delirium as the main feature.

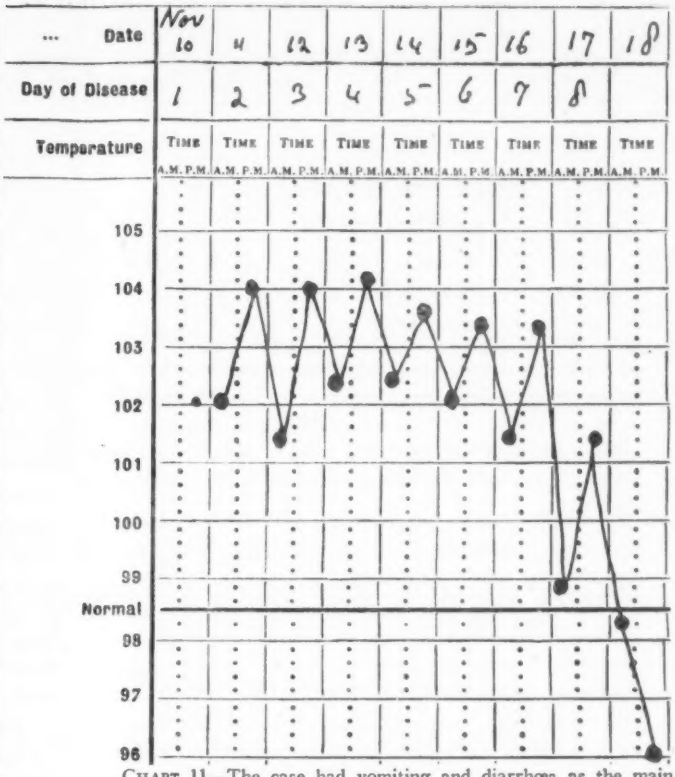


CHART 11—The case had vomiting and diarrhœa as the main features.

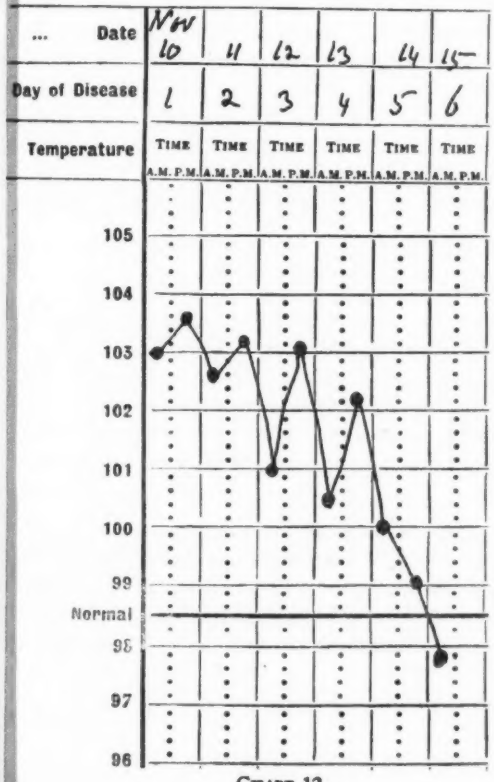


CHART 12

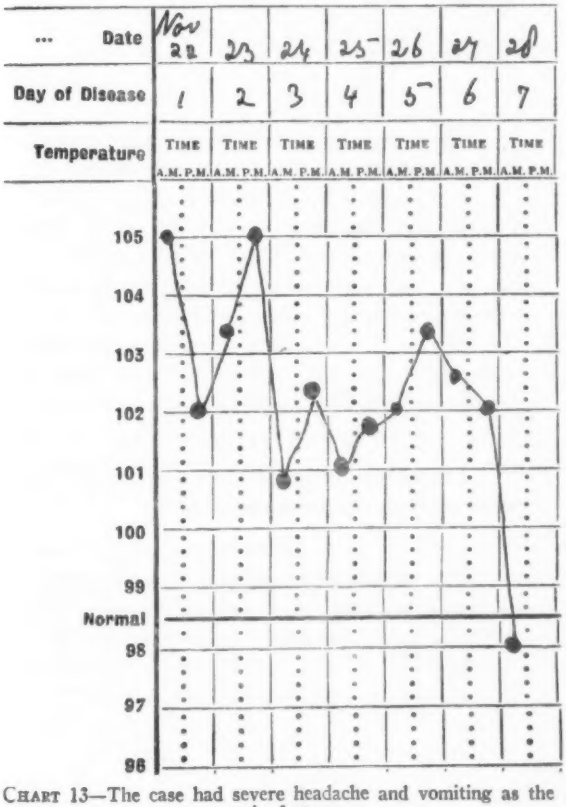


CHART 13—The case had severe headache and vomiting as the main features.

MORE OBSERVATIONS ON BRONCHIECTASIS

S. S. MISRA, M.D., (HONS.), M.R.C.P. (LOND.).
Physician, Medical College Hospitals, Lucknow, U. P.

In the April 1941 issue of the Journal of the I.M.A., an extensive survey was made by me of our present views on bronchiectasis—its ætiology, pathogenesis, symptoms and signs, diagnosis, prognosis and treatment with full reference to the available literature. A few cases were described and some lipiodol skiagrams were shown.

These observations may be briefly recapitulated here. The condition appears much commoner than was previously supposed, due to faulty textbook pictures which described only the advanced variety. Young children often suffer from it. In the pathogenesis, the old view of fibrosis of the lung leading to dilatation of the bronchi is being modified by the newer theory of atelectasis as an invariable precedent of bronchiectasis [Findlay (1935), Jennings (1937), Lee Lander and Davidson (1938)]. The base of the left lung is the one most commonly affected. Radiologically, the varieties are cylindrical, fusiform, beaded, saccular or mixed. Clinically, in young children, bronchopneumonia after measles or whooping cough or smallpox or influenza is the commonest history, while in the older people, unresolved pneumonia or chronic bronchitis are the important factors. The symptoms and signs in children are quite different from those in the older people. The signs are variable depending on the emptiness or fullness of the dilatations. In the adults, three varieties are described: firstly, chronic persistent cough with impaired percussion note on one or both sides with deficient or harsh breath sounds associated with medium or coarse crackling persistent crepitations—the bronchiectasis sicca; other varieties are recurrent hæmoptysis variety and the classical variety of textbooks. Repeated sputum examinations are essential to exclude pulmonary tuberculosis. With the above symptoms and signs, diagnosis is not difficult, but wherever possible and practicable, a lipiodol skiagraphy may be done. The prognosis appears to be less grave than was previously supposed. In the treatment, prophylaxis is very important. To be successful, diagnosis must be made early and treatment with prolonged and persistent postural drainage should be adopted in young children with the above history and in adults after delayed resolution of pneumonias. Medicinal treatment consists of fresh air, good food, avoidance of cold and improvement of general health with cod liver oil and vitamins, and the use of creosote if the sputum is foul. On the surgical side, A.P., phrenic evulsion and thoracoplasty have been found to be useless. The operation of choice is lobectomy, which, however, is a somewhat dangerous procedure.

During this year, so far as I am aware, no new articles have appeared on the subject.

During the present year, in about 8½ months, (January to April and August to December) 26 cases were clinically diagnosed as suffering from bronchiectasis in the Medical Out-Patient Department of our hospital under my charge. 16 of these cases were lipiodolised once, and of these 16, three were lipiodolised twice.

An analysis of these 26 cases revealed the following important facts: 16 cases were lipiodolised and found positive, 10 did not agree to the employment of lipiodol. 12 cases were above 20 years and 14 cases below 20. All the cases except three were males. All cases came

---

Seven Days Fever (?)—BHUPAL SINGH *(contd.)*

DIFFERENTIAL DIAGNOSIS

The disease has to be distinguished from malignant malaria, influenza, typhoid fever and dengue.

Malignant malaria is likely to be confused but blood examination should clear the diagnosis. The slow pulse, the typhoid tongue and the dull listless appearance are very suggestive of the fever of the typhoid group. But the temperature coming down on the 5th, 6th or 7th day clears the diagnosis. The temperature may resemble dengue but the limb and joint pains and the characteristic rash are absent.

TREATMENT

Treatment is symptomatic—salicylates with or without bromides are quite enough.

CONCLUSION

The fever is a definite clinical entity. Whether it is identical with the spirilla fever described by Manson, systematic laboratory examination alone could decide.

during the cold months and the majority were from the poorer class. In children all had recurrent bronchopneumonia after measles or whooping cough or small pox; in adults 5 followed lobar pneumonia, 5 chronic bronchitis, 1 influenzal bronchopneumonia and 1 acute abscess. There were six cases of bronchiectasis sicca, 3 of recurrent hæmoptysis type and 3 of classical variety. Sputum examined was found to be negative. Lipiodol skiagraphy showed that the left lower lobe was involved in 16 cases, right lower lobe in 5 and both lower lobes in 5 cases and most of them were of the mixed or cylindrical variety; worm-eaten appearance of fibrosis was seen in a few cases.

Clinical Picture

Children give the history of recurrent attacks of bronchopneumonia. During the attack the child is usually seriously ill and responds well to adequate dosage of M. & B. 693 or sulphanilamide. At times, however, fever is not very high as compared with the physical signs present which is a suggestive point in diagnosis.

Case 1—Jabbar, 6 years, came with fever and extensive signs of bronchopneumonia; responded to M. & B. 693. History of getting such attacks for two years, physical signs persisting after the fever had subsided. Diagnosis was confirmed with lipiodol. Postural treatment was given which improved the general health. Had seen the patient once a month (11 months) with no more attacks of bronchopneumonia.

Case 2—Baby T, 2 years, with history of getting recurrent attacks; typical case with marked physical signs. Started improving with postural drainage, but died 1 month later with an overwhelming attack of bronchopneumonia.

Case 3—Chintamani, 9 years, from Almora, typical history and positive signs with lipiodol (*vide* Fig. 3 in plate facing page 297). Seen in December 1941.

Case 4—Hamida, reported previously; under treatment since September 1940; has had no more attack of bronchopneumonia except one when he had gone to his grandmother's place where postural drainage was stopped for 12 days. Has much improved in general health, with signs persisting.

Adults—Bronchiectasis sicca. Six cases belonged to this series. In these the symptoms were usually chronic cough which did not respond to the usual sedative cough mixture. Previous history was variable—usually of chronic bronchitis or poorly resolved pneumonia. In the latter type, the signs were impaired note at one base, deficient air entry or harsh breath sounds with persistent crackling crepitations, while the trachea and apex beat were pulled to the affected side. In the former variety the only signs were harsh breath sounds with medium or coarse crackling crepitations, while the apex beat and the trachea were in their normal position.

Case 1—B. P., 54 years, history of frequent cough which did not respond easily. No previous history of pneumonia, percussion note impaired, breath sounds harsh and crackling crepitations present, trachea central. Has been under observation for 9 months, with signs clearing up. Lipiodol skiagraphy was positive.

Case 2—T. S., 49 years, similar as above, lipiodol positive.

Case 3—B. F., 48 years; got severe influenza in 1919 while in England; lipiodolised in 1924 by Tuder Edwards and diagnosed as bronchiectasis; left phrenic evulsion and A. P. were done with recovery. He was seen by me in 1941. Trachea was found deviated to the left side. There were impaired percussion note, harsh breath sounds and a few coarse crepitations; was lipiodolised again and found positive (*vide* Fig. 2 in plate facing page 297).

Recurrent hæmoptysis variety—3 cases. In these cases the predominant symptom was hæmoptysis. Usually these are mistaken for and treated as cases of pulmonary tuberculosis.

Case 1—S. A., 25 years, clerk, reported previously; has been under observation for 16 months now and has rejoined his duties. Signs are still present. If he stops postural treatment cough increases and he gets febrile. Hæmoptysis has recurred several times.

Case 2—J. H., 32 years, same history and symptoms and signs as above; lipiodol positive (*vide* Fig. 1 in plate facing page 297). He has improved and gone back to work and is under observation for 9 months.

Case 3—S. A., came under observation with the usual signs. Lipiodol positive. He was lost sight of.

Classical variety—3 cases. In them, very little can be done. They present the classical picture. Only two cases are mentioned here.

Case 1—M. S., 30 years. Lipiodol positive (*vide* Fig. 5 in plate facing page 297) and got rapidly worse.

Case 2—A. K., 48 years, money lender from Kabul. Lipiodol positive. Improved slightly.

Diagnosis

I have nothing new to add to my previous observations. Repeated and careful sputum examination is essential to exclude pulmonary tuberculosis, even in young children by examination of the vomited matter. My experience has been that the signs mentioned above are so typical that lipiodol examination need not be

insisted upon by the practitioner unless the patient can afford it. In over 90 per cent of the cases, I have had the clinical diagnosis confirmed by lipiodol examination. Apart from pulmonary tuberculosis, other conditions to be differentiated from are putrid bronchitis, chronic lung abscess, empyema, syphilis of the lung, and moniliasis.

Prognosis

This is distinctly hopeful. Several cases have been under treatment for from 6 months to 18 months and have shown improvement in general health and have been allowed to go back to their work. Real improvement and even cure is only possible if prophylaxis is insisted upon in every case and early postural treatment is instituted which is only possible if early diagnosis is made. This again can take place only when the newer ideas in early diagnosis are popularised.

Treatment

Prophylactic. This is of great importance and consists mainly in the early institution of postural drainage done for 10 to 15 months thrice daily. This has to be maintained for long periods of time, perhaps for life in the not-so-recent cases. Deep breathing exercises are distinctly helpful. Nasal sinuses should also be attended to in all cases.

Curative. (1) Surgical. My previous remarks apply, *viz,* A.P., phrenic evulsion and thoracoplasty have been found to be useless. Lobectomy and even pneumonectomy would be the ideal treatment provided the patient is agreeable to run the risks and suitable surgeons found to perform the dangerous operation.

(2) Medicinal. (*a*) General treatment should not be overlooked, and must be assiduously carried out: cod liver oil and the vitamins with good food, fresh air, sunlight, deep breathing and regulated exercises are important. Both stock and autovaccines have been found to be of little value. (*b*) If cough is unproductive, a stimulant expectorant with iodides will help a lot. If sputum is foul, creosote in rectified spirit may be added to the mixture. Creosote baths are also helpful.

(3) Postural treatment is of great help, particularly for the prevention, in all children getting recurrent attacks of bronchopneumonia and adults with delayed resolution. It should be started as soon as possible with the help of a modified Nelson's bed, raising the foot of the bed by 9 inches. The exact posture of the patient will depend on the site of lesion (Misra, 1941). Later, the patient can lie across the bed with his head touching the ground and the trunk upside down, while an attendant prevents him from falling off. This has to be done for 15 minutes, three or four times a day, 2 hours after the last meal, for many weeks and months. This posture is eminently suited for the majority of cases where the lesion is situated in the posterior parts of the lower lobes, specially the left lower lobe.

Conclusion

1. Bronchiectasis is a common condition—26 more cases have been described.

2. For early diagnosis, the new ideas must be popularised amongst the general practitioners. Only then, institution of postural drainage will prevent the development of the condition in most cases and cure the early ones.

3. Even in classical cases, postural treatment eases the burden in many instances.

Acknowledgment

My grateful thanks are due to Professor Sahai and Professor Burridge, Dr. R. Lal and Dr. Chaterjee for help and to Messrs. Raptakos Brett & Co for supplying lipiodol at cost price.

Reference

Misra (1941)—*J.I.M.A.*, 10:303.

* * * *

DISCUSSION

This paper was read on the 28th December 1941 in the Medical Section of the XVIII All-India Medical Conference, Hyderabad (Deccan) and in course of an interesting discussion that took place, Dr. Deodhar suggested the employment of N.A.B. injection, Dr. Jaisoorya advocated tuberculine, and Dr. Rezvi wanted that A.P. may be given a more liberal trial.

SURGICAL SHOCK

BAHADUR KHAN, F.R.C.S. (ENG.), M.CH. (LEEDS),
Surgeon, Osmania Hospital, Hyderabad-Deccan

Out of all the chapters of surgery, I have selected to discuss with you the subject of surgical shock, because it follows the surgeon like a ghost. The subject itself is in a confusion and its therapeutic measure is in the experimental stage. The studies during the present war has cleared away many difficulties and have laid down the practical lines of treatment, and still there are others to be solved, especially for us who work under the circumstances prevailing in our country. We know very little about this phenomenon, although we speak often of this term in our daily practice, but its nature and the means to fight it, is not well-understood. It was this obscure knowledge and unpreparedness to meet it, that made me face with mortalities which are still a mystery to me. At present it is not possible for me to give you experimental or laboratory data; instead I propose to lay out the materials that have been collected, giving my own impressions wherever possible and am eager to hear your experience in your practice.

It is difficult to define shock in a few words. Usually it is defined by a description and even that is so varied that none will satisfy all who use the term. Surgical shock, generally is used to denote any generalised disturbance in the function of the body following, in a short space of time, a more or less localised injury. It may mean no more than 'fright" but is more generally used to denote a grave disturbance often ending in death. The term shock may cover a multitude of conditions and it is now known that more than one condition may be included in its causation which will be discussed later. Therefore, shock is not one clinical entity. Reginald King defines surgical shock as a condition of cerebral anæmia with the depression of the higher centres, consequent on a reduction in volume of the circulating blood. There is sufficient clinical evidence to show that there are other factors in action simultaneously with the above in production of shock. These factors act directly on the vital viscera and exaggerate the syndrome of shock. The neurogenic factor cannot explain the various phenomena we observe in this condition. Because the meaning of the word is uncertain and conveys a false sense of unity, Grand and Reeve do not use the term shock, remaining on the safer ground by describing and classifying reaction to injury.

The nature of shock varies. It may be just a 'fright', fainting on seeing the sight of blood, or it may be severe enough to cause failure of circulation of blood and death. There is a difference of opinion among the workers on this subject, as to which degree of severity should be included in the study of this subject. Some take only the severe state while others include all states. Perhaps the latter group sees more cases and obtain better results in the treatment of shock than the former. It is difficult for one to foretell whether a mild state is going to end spontaneously or progress into a severe one proving fatal. This is the case particularly after a severe injury or major operation. The lack of a common basis of diagnosis makes it impossible to estimate the efficiency of the various methods of treatment.

Classification

For practical purposes shock is classified as (1) primary and (2) secondary.

Primary Shock—According to Reginald King, primary shock is due to nervous impulses either central or peripheral in origin which, by reflex stimulation of the vasomotor centre, cause a sudden fall in blood pressure and volume. Usually recovery follows after a short interval, but some cases persist and pass into secondary shock. This phenomenon is usually seen in many cases of severe burns in adults. Rarely the primary shock is fatal and in cases of burn the mortality has been estimated as 2·3 per cent.

Secondary Shock—This may follow after an interval of few hours or be continuous with the primary. The symptoms increase slowly or insidiously. It is the result of several factors acting simultaneously, most of which tend to reduce the blood volume, *e.g.*, pain, fear, toxæmia and shortage or loss of body fluid as a result of hæmorrhage, œdema, vomiting, sweating and diarrhœa, long exposure to cold, fatigue, the effects of certain anæsthetics and asphyxial state. It should be considered as serious because although many cases recover spontaneously, the altered condition of the circulation may persist and gradually become worse, unless treatment is given promptly and efficiently. The mortality has been calculated as 60 per cent, even after all kinds of specific therapy. My estimate is still more gloomy with the equipment I have at hand.

A person in fully developed shock is ill, perhaps pale, and has a rapid and thready pulse, pallor, cyanosis,

a cold sweating skin, low temperature, shallow and rapid respiration and often exhibits vomiting, thirst, restlessness and lessened sensibility and altered mental state. The blood pressure is low. In the early stage the pressure rises for a while before falling. The relation between pulse and pressure is not constant. Either of them may be normal while the other is low, or both of them low. This state may lead to death.

The varieties of shock are: (1) Postoperative shock, (2) shock due to trauma alone, (3) shock due to trauma complicated with hæmorrhage, (4) shock due to hæmorrhage, (5) shock due to burn, (6) shock due to perforated duodenal ulcer and (7) primary shock due to adrenal tumour.

Theories of Shock

Now I will discuss the theories which have been put forward to explain shock.

Toxæmia—As early as 1812, Lorry believed that the cause lies in the injured part. Clowes in the seventeenth century and Wiseman in the eighteenth century mentioned the cause of death as chemical. The first confirmation of this toxic theory was seen in shock that followed the intravenous injection of peptone in 1829. It was further proved by Dale in 1910 and later in 1919 by injection of histamine. Later researches disproved Dale's hypothesis of histamine as the cause of traumatised shock.

During the last world war the works of Cannon and Bayliss and others proved one or the other of the following to be the cause of shock:

1. Autolysis of muscles, 2. toxin of damaged tissue, 3. product of cellular disintegration, 4. toxic nitrogenous substances from traumatised muscles.

Histamine can be estimated in the blood. In the cases of shock it is not increased. It has been found that except in the skin, histamine is present only in very minute amounts in the tissues of the body.

O'Shaughnessy and Slome have failed to find evidence of toxic substances in the blood returning from the traumatised limb in the animal experiments. Blalock and Simonart have demonstrated that the shock fails to develop when the arteries and veins of the traumatised limb are tied and that it does develop when the artery is released but the vein is still ligated, which excludes the return of the toxic substances to the circulation. Thus, these workers have clearly demonstrated that the loss of blood and plasma in the injured region is quantitatively adequate to account for the circulatory failure resulting from trauma, extensive burn and from intestinal manipulation. Although histamine has now been freed from blame, it does not mean that shock may not be produced by toxic substances for there are other things in the altered chemistry of blood which would act as histamine and produce the state of shock.

Loss of circulating fluid—The loss of circulating fluid may be through hæmorrhage, external and internal.

It is surprising how much blood may be lost in hæmorrhage and yet the patient survives and it is done with the aid of the body compensation for the lost blood.

More important source of the loss of the body fluid is the concealed hæmorrhage and local œdema, dehydration from vomiting, diarrhœa, perspiration and evaporation from the burnt surface. This insensible loss is as much as 1500 c.c. per day. It has been shown that symptoms of dehydration appear when the fluid equal to 6 per cent of the body weight is lost and anuria with 10 per cent of the body weight.

The marked fall in the circulating blood volume produces a corresponding fall in arterial pressure. Few cases may have a normal blood pressure for a short time but this always falls as shock increases. It has been found that large arteries and veins are relatively empty and constricted in shock. The heart is not filled to the capacity. There is evidence to show that most of the blood remains in the vast capillary network of the body, such as capillaries of the muscle, intestine and skin. The capillary stagnation is brought about by an active dilatation of these minute vessels. It has been shown to occur experimentally by the action of toxins. Such toxins are absorbed in cases of burn, infection or intestinal strangulation. It is not histamine. Their source may be from the damaged tissues or the electrolytes of the blood which show variations in the concentration in cases of shock. The investigation of Slome and O'Shaughnessy supports the view that the capillary dilatation is a result of a reflex nervous stimulation such as pain, fear and discounts tissue toxæmia as the cause of traumatic shock.

As a result of capillary dilatation, the volume of the circulating blood is reduced in the great vessels and heart. The effects of this reduction are, that the vasomotor system attempts to compensate by the outpouring of adrenaline and a contraction of the arterial side of the circulation. It may keep the blood pressure normal for a short time, but the fall in the blood pressure occurs later. A vicious circle is produced.

This lowered blood pressure is unable to force the blood in the capillaries. On account of this slow circulation, blood remains long in the capillaries and finds difficulty in reaching the veins. These are consequently poorly filled and the blood is hindered from reaching the heart. The heart is not filled to capacity and its output falls, further lowering the blood pressure. Secondary effects occur as a result of stagnation of the capillary circulation. Plasma passes out of the capillaries into the tissues leaving the blood more viscid and this in itself makes the flow of blood more difficult.

The capillary blood is venous in shock, and as a result of prolonged anoxæmia the endothelium is damaged, becoming more permeable to fluid and salt.

The further effects of this stagnation are seen in lowered heat production, diminished basal metabolic rate and lessened output of urine.

In a traumatized part, either blood or plasma enters the tissue in such a quantity and leaves the circulation for good that it has been proved to be sufficient to cause failure in peripheral circulation. This has been proved by experiments of comparative measurements of normal and injured limb.

In the abdominal operation where the abdomen has been kept open for longer periods and bowels roughly handled, there is reactionary œdema of the bowel and peritoneum and a collection of serous fluid in the cavity, drawing away enormous fluid from the circulation. It helps the other factors in the development of shock and failure of peripheral circulation. The collection of this fluid may be seen even during the operation.

Excessive sympathetic stimulation—The evidence is now coming forward that the sympathetic adrenal system may be overstimulated and this is the normal compensatory process in hæmorrhage and shock produced by toxic substances. This compensation which is normal in ordinary cases, may reach excessive stage and prove harmful. Freeman showed that if adrenaline is infused into an animal at the rate it is normally secreted, the animal passes into a state of shock with a concentration of blood and low blood volume. Freeman suggests that in production of shock, the sympathetic by its activity causes intense vasoconstriction, a peripheral asphyxia and capillary dilatation and thus a vicious circle is established and that shock is prevented by removal of sympathetic or its paralysis by ergotoxine. Keeping the patient warm also reduces the sympathetic activity. This neurogenic factor appears to be at work in the clinical experience because we know that operated cases sometimes develop a marked degree of shock without any obvious reason. Perhaps an element of fear, pain and exposure to cold add to it. The excessive sympathetic activity giving rise to vasoconstriction does not prevent concealed loss of fluid into the tissue and it may even help towards it. It shows that adrenaline and ephedrine will do more harm in shock. Pituitrin has similar effect. Sympathetic over-activity causes an elevation of potassium in blood plasma. Thus it has its effect both on body fluid and cells.

There is some evidence to show that in some cases of shock, the vasomotor mechanism is inhibited. This depression may follow over-excitation and may help in the fall of blood presure and exaggerate the state of shock. This factor may be at work in cases of post-operative shock. This theory of inhibition is not approved by all.

Alteration in blood—In the blood changes we find an explanation of the complex of shock. Blood consists of two parts, cells and plasma. The normal ratio between them is 46 per cent plasma. When the fluid leaves the blood the proportion of plasma falls, while that of the cells rises. The specific gravity of blood which is normally 1056 rises. This rise is seen several hours before the blood pressure begins to fall. Vasoconstriction increases the density while vasodilatation brings a fall. The red cell count tends to increase. Plasma protein which is normally 70 mgm. per litre undergoes slight change.

Potassium concentration of blood undergoes marked change. Normally it is present in highest concentration in the cells while sodium is in the plasma. It is true also to any tissue such as muscle. The normal values for potassium are 350-465 mgm. per cent for cells and 17 mgms. per cent for plasma. In shock there is a shift of potassium from cells to plasma and the value for the whole blood is also increased. The correct proportion of potassium and sodium is important for the activity of the cell and the body is thus protected from its injurious effect.

When we study the injurious effects of potassium, we find an explanation for the various manifestations of shock. Its effect on heart is that it produces slowing of rhythm, decrease in P.R. interval, cardiac muscle weakness. Striated muscle requires high potassium concentration in the fibre and low in the interspace. Factors such as fatigue, increased hydrogen ion concentration, reduction of blood supply, anoxæmia and

trauma cause muscle to lose its potassium, giving rise to an increase of plasma potassium. The same changes take place in smooth muscle. It produces vasoconstriction including the coronary arteries. Small doses cause a rise in blood pressure while a large dose, a fall. Therefore, for a momentary or sustained rise of blood pressure it is necessary that potassium is present in blood in correct proportion and the factors which keep this balance are, efficiency of the kidney in excreting the base, the action of the liver in holding it back from circulation and its excretion into the bile, temporary storage in the muscle and red cell, together with the loss which occurs through vomiting and salivation. It is evident that one of the variables in shock, whether produced by tissue damage, loss of fluid or hæmorrhage, stimulation of the sympathetic nervous system or destruction of the adrenal cortex, is an alteration in potassium metabolism.

Adrenal exhaustion—The conception that adrenal glands are associated with shock dates back to the work of Brown-Sequard in 1852. Destruction of the cortex or withdrawal of cortical extract in an adrenalectomised animal is associated with a change in both electrolyte and non-electrolyte among which, the disturbance in sodium concentration and the retention of potassium are important.

The action of the cortical extract may be summarized as follows:—(1) Restores blood volume, (2) relieves hæmo-concentration, (3) raises blood pressure, (4) raises the alkaline reserve, and (5) restores kidney function and causes an increase in the excretion of potassium as well as ammonia and retention of sodium, (6) increases production of heat, (7) increases resistance to toxin, (8) raises glycogen both in the liver and the muscles, (9) decreases retained nitrogen element in the blood and (10) lowers blood potassium. It shows how valuable cortical extract is in the treatment of shock.

Insulin acts similarly. It increases base retention, lowers blood potassium, and increases the liver and muscle glycogen.

Cortical extracts are contra-indicated in cases of sepsis because potassium is lower in these cases and cortical extract will lower it still further.

Renal Failure—Repeated post-mortem examinations show that the kidneys are damaged in cases of shock. The appearance is similar to those in the transfused person, but however, some of them never had transfusion in their treatment. The kidney failure may explain increased blood urea, acidosis and hyperpotassæmia. Few cases developed anuria. Excessive vomiting, noticed in some cases of postoperative shock, may be explained on the basis of damaged renal function.

Treatment

Having studied the causative factors in shock I must now turn to the treatment which is more important for clinical purposes.

Heat—Application of heat is the earliest treatment of collapse suggested by Hunter in 1776. Different methods of warming were used such as tepid bath, introduction of hot water by stomach tube and hot blankets. During the last war, it was noted that incidence of shock was 20 per cent more in winter than in summer. We know now that shock is the result of vasoconstriction. Therefore, any factor such as cold which will augment it, will aggravate shock. Application of heat not only tends to restore deficient body heat, but also lessens the vasoconstriction.

Control of pain and fright is also important in preventing and reducing the intensity of shock. Morphia should be administered as soon as possible and repeated whenever necessary. It relieves pain, increases alkaline reserve, prevents further muscle injury and prevents release of potassium.

Oxygen—Administration is useful in prevention as well as treatment. Lack of oxygen in blood produces acidosis, vasoconstriction, loss of potassium from muscles and tissue fluid and plasma, and loss of function in the nerve cell.

Emetics and lavage—As far back as the eighteenth century it was shown that those cases that vomit after trauma or burn survive in a greater percentage and the vomit expels the increased amount of potassium of the gastric juice and helps in reducing the potassium in the circulation. In view of this fact gastric lavage of continuous suction in these cases associated with hyperpotassæmia would appear beneficial provided a positive fluid balance and an adequate sodium intake is maintained. I have no experience of this therapy.

Adrenal extract—Administration of some preparation, *e.g.*, Cortin or Eschatin is very useful in combating shock. It is best given intravenously in doses of 10-20 c.c. and as much as 50 c.c. may be required in divided doses, to keep up blood pressure and body heat and to reduce the hyperpotassæmia. It is difficult to carry it out, in view of its high cost, specially in the hospital cases. In those cases in whom I have tried

this drug the dosage that I gave was not sufficient and was not controlled by laboratory data.

Sodium bicarbonate—Soda bicarb dilutes the blood and increases its velocity, decreases generalised vasoconstriction, increases the elimination of potassium through the kidneys. Sodium causes the diffusion of potassium through cell membrane into the red cell. In case of hyperpotassæmia, sodium solution maintains the normal balance between intracellular potassium and extracellular sodium fulfilling thereby factors for normal physiological functions.

Fluids—I now come to the question of replacing lost fluid. In administering fluids it should be kept in mind that the quantity should be sufficient to compensate the loss from the circulation through urine and vomit, evaporation and perspiration. Therefore, it is not sufficient to give nominal quantity of a pint or half a pint and hope that shock would leave your patient. Total quantity given in a day may be as much as 4000-5000 c.c., so that there is a positive fluid balance. We must remember that blind administration of these large quantities may lead to overdilution of blood and pulmonary œdema. The amount of fluid required is best controlled by repeated examination of the specific gravity of blood, hæmoconcentration, amount of plasma-potassium, plasma protein and red cell count. These are the indications which show whether the body requires more fluid or not. The next point to consider is the quality of fluid to be given. The fluid should be able to remain in circulation and not pass out of the capillaries, so that the circulating blood is increased and blood pressure is raised. For this purpose the best fluid is one which resembles blood in viscosity. The third point is the speed of administration. In cases of excessive dehydration and shock, continuous intravenous method is to be adopted, to be followed by drip method for maintenance of the positive balance.

Now I will discuss the value of different fluids in the treatment of shock.

(*a*) Normal Saline—It gives temporary, though prompt recovery. The rise of blood pressure lasts for a few minutes to half an hour after which it returns to its previous level or even lower. There is a limitation to the quantities of normal saline to be administered. The blood pressure may have fallen to 50 per cent and the circulatory blood volume may be only 60-70 per cent of the normal. To restore this, large quantities have to be given but this fluid readily passes out of the vascular system into the tissues. This explains the temporary beneficial effect; therefore, there is a practical limit in using the intravenous saline. In large quantities it may cause pulmonary œdema. Cardiovascular disease and degenerative changes in the vascular endothelium from prolonged anæmia greatly increase the risk of this complication. The risk of œdema is greater in the advanced stage of shock. It can be avoided by drip method.

(*b*) Hypertonic Saline—Hypertonic saline acts in two ways. (*i*) It gives immediate rise of blood pressure. The response is so sudden and marked that it bears little relation to the amount of the fluid given. (*ii*) The prolonged effect of intravenous hypertonic solution in raising the blood pressure is partly due to altered osmotic pressure of the plasma in circulation which helps in reabsorption of the tissue fluid. It has been shown by Scudder that 5 per cent sodium chloride solution is very effective in cases of shock.

(*c*) Subcutaneous Saline—Isotonic saline or glucose given by this route over prolonged period restores blood volume and pressure in shock.

(*d*) Water absorption *via* alimentary tract—Fluids given by mouth or per rectum give rise to a gradual and sustained rise in blood pressure because it stays in the circulation longer than any of the methods mentioned so far, but the difficulty is that sometimes this alimentary tract does not tolerate fluids and vomiting occurs, or the fluid is rejected by rectum.

(*e*) Hypotonic Saline—There is a place for hypotonic saline in shock therapy. Saline of 0·5 per cent strength is rapidly absorbed when administered subcutaneously and gives a sustained rise of blood pressure. It is not of much value in the late stage of shock. In these cases absorption from the tissues is absent, because the osmotic gradient is low. To raise up this gradient, the simultaneous introduction of hypertonic saline intravenously by drip method has proved effective. Hypotonic saline can be given in large quantities without meeting the complication of pulmonary œdema.

Failures of saline therapy may be due to two factors:—(1) Quantity given is too small and (2) the time selected is too late.

My experience with saline, the only resource I have, is disappointing in fully developed shock in post-operative and burn cases. The improvement in the condition of the patient is very temporary.

The above discussion may have revealed the failures in maintaining blood dilution and pressure with saline and we have to search for some fluid which is able to exert osmotic pressure and at the same time is not permeable to the capillaries.

(*f*) Gum acacia—For this purpose solution of gum acacia 6 per cent has been employed. It increases the volume of the blood by absorption of the fluid from the tissues and thus reduces the hæmoconcentration. It is unable to pass through the endothelium. The disadvantage is that any hypertonic fluid will draw fluid from the cells of the tissue as well as the blood and these contain high concentration of potassium and thereby the plasma concentration of potassium rises, with its injurious effect. Another disadvantage is that if given in large quantity it reduces the oxygen carrying capacity of blood.

(*g*) Blood transfusion—Then we come to natural circulating fluid, *e.g.*, blood, for maintaining the circulation, pressure and dilution of the blood, but its availability at a moment's notice is difficult, even in those countries where the blood transfusion service is well-established and efficient, especially when we have to deal with a number of cases at a time. Blood transfusion requires blood grouping and only compatible donors have to be selected. We may have to give more than one transfusion in a short space of time. Such problems brought the blood bank system into existence. Blood cannot be preserved for ever. Its therapeutic value lasts three weeks at the most. Even during this period, process of disintegration is in progress and the products are toxic when given rapidly and in large doses. The constituents which disintegrate early are platelets, white blood corpuscles, prothrombin and blood sugar. The decrease in pH of the plasma, the rapidly mounting concentration of ammonia, the increase in phosphorus and hæmoglobin are criteria of decomposition. The most striking change is that of potassium. An increase as much as 1,000 per cent occurs. None of the preservatives tested prevent it. This decomposition is governed by factors, such as shape of the flask, pH, etc. The potassium diffusion is in progress even before the laking of the blood. Agitation of the blood hastens the change. Deaths have taken place from the use of stored blood on this account.

Having considered the difficulty in obtaining blood for transfusion, we have to see how far transfusion is effective in shock. Except in cases of shock following hæmorrhage, the results are disappointing. In cases of shock, as we have seen above, there is already a hæmoconcentration and raised specific gravity and raised cell count. There is no cellular loss from the circulation but that of the plasma alone. We intend to produce blood dilution. In transfusion we introduce blood corpuscles and plasma in the same proportion as that of the normal blood. If we introduce more cells, the object of dilution is never obtained and it may even prove harmful by further raising the specific gravity. Therefore, blood transfusion has fallen into disrepute. In hæmorrhage the situation is different. There is an actual loss of whole blood consisting of cells and plasma and hæmatocrit is less than normal; therefore, introduction of whole blood will increase the quantity of circulating fluid and at the same time keep the concentration and specific gravity within normal limits.

(*h*) Plasma and serum—Therefore, the loss of plasma from the circulation that takes place in shock, must be replaced by the plasma alone. This has not been possible until recent date. The researches during the present war have helped a great deal in the development and completion of the technique. Serum and plasma have one common advantage that they do not require grouping. The agglutinin factor is small and is diluted by the patient's plasma. To avoid even this minor risk, plasma of groups II and III are selected. They can be easily prepared, are stable and can be preserved indefinitely under suitable conditions. They can be dried and packed in ampoules, and transported. For administration this dried plasma is dissolved in distilled water. Its concentration can be altered according to the requirements. Lately 4 times the normal strength has been tried and proved very efficient in raising the osmotic pressure, of the blood. Addition of glucose to this concentrated plasma called "prepared plasma" has been found to give better results.

Thus we find in plasma the most natural agent for the treatment of shock.

To summarise, we have to combine more than one therapeutic agent in the treatment of shock, *e.g.*, heat, morphia, transfusion of plasma, 5 per sodium chloride, normal saline, and Eschatin, so that we get a combined effect. For the indication of any or all of them we have to be guided by the estimation of blood pressure, hæmoconcentration, specific gravity of blood, plasma potassium, plasma protein and red cell count. With a scientific procedure as this, we can hope to reduce the mortality of secondary shock which in the best organisations, is still high.*

* Read at the Scientific Section of the XVIII All-India Medical Conference, Hyderabad-Deccan, December, 1941.

JOURNAL OF THE

INDIAN MEDICAL ASSOCIATION

CALCUTTA, JULY, 1942

SUPERFICIAL PUNCTATE KERATITIS

Superficial punctate keratitis is quite a common affection of the eye. It is an inflammatory condition characterised by discrete spots in the superficial layers of the cornea.

It was first described by Ernest Fuchs in 1889. Simultaneously, Adler (1889) and Reuss (1889) reported a few cases under their observation. Fuchs described it as "an inflammatory condition of acute onset affecting one or less frequently both eyes, starting as catarrhal conjunctivitis and characterised by the appearance after about four days on either side of Bowman's membrane of small discrete punctiform infiltrates of a transient nature."

An epidemic form of superficial punctate keratitis was first described in India by Lt. Col. Herbert of Bombay in 1901. In 1920 Kirkpatrick in Madras described an epidemic of keratitis which he called macular keratitis. Later on, Wright who examined some of Kirkpatrick's cases with corneal microscope, found them to be cases of superficial punctate keratitis. Subsequently, Wright reported 3,500 cases which occurred in an epidemic form in Madras during 1928-1930. He named it at first as "Madras Keratitis" but subsequently changed it to "Keratitis diversiformis et uveitis anterior." In Calcutta, Col. Kirwan reported 1512 cases in an epidemic which occurred during 1931 June to 1933 July.

Usually there is a preliminary conjunctivitis with pain, lacrimation, photophobia, circumcorneal injection and sometimes transient infection of the upper respiratory passage. Sometimes injection of the conjunctiva may be absent and the patient may only complain of grittiness and foreign body sensation. Quite often the preauricular gland on the affected side is found to be enlarged.

The disease is most often unilateral, but bilateral cases are not very uncommon. When bilateral, the affection in the two eyes is by no means simultaneous. The second eye is usually affected a few days after the first.

Corneal infiltrates usually appear three to four days after the preliminary conjunctivitis. When these appear, the injection of the conjunctiva tends to subside. These infiltrates appear as grey round spots and they vary in size from very minute size, which require a very high degree of magnification to be seen, to large areas with crescentic edges, made up by coalescence of a number of smaller ones.

They may assume various shapes, round, irregular, angular, ring shaped and disc shaped. These infiltrates may be arranged in groups or rows, or scattered irregularly. They are more commonly situated in the centre of the cornea and in the lower part than peripherally or in the upper part.

The infiltrates may be in deeper layers of the corneal epithelium but are essentially in the superficial layers of the substantia propria. Vesiculation and desquamation are rather uncommon. Sometimes, however, bullæ form and fluid can be drawn from the punctured bullæ. Sometimes transient corneal œdema is found. Corneal sensation is impaired but it tends to recover rapidly.

Occasionally changes penetrate more deeply into the cornea. The whole thickness of the cornea is involved with swelling and deformities of its posterior surface; folds in Descemet's membrane and endothelial deposits do occur and signs of anterior uveitis appear.

In order to arrive at a diagnosis of superficial punctate keratitis, the cornea should be stained with fluorescein and examined by means of a lens and loupe or by slit lamp, when these infiltrates will appear as minute green dots in the deeper layers of the epithelium or in the superficial layers of the substantia propria.

66 per cent of the cases are unilateral. Males and females are affected with equal frequency. Young adults are mainly affected. The disease is not contagious.

The causative organism is unknown. Various theories have been put forward. The recent idea is that the disease is caused by a filter passing virus (Wright). The idea was first put forward by Fuchs on account of the resemblance of the disease to herpetic lesions. Grütter produced experimentally superficial punctate keratitis by inoculating with contents of herpetic

vesicles. He described it as an attenuated form of herpes. Wright tried to transmit the disease to man and black rabbits by implanting on their cornea the epithelial scrapings of a diseased eye but met with very little success. Similar attempts were made by Kirwan in man and white rabbits but met with similar results.

Verhoeff (1911) thinks that it is a sort of neuropathic keratitis secondary to some toxic lesions of the Gasserian ganglion.

Herbert (1901) thinks that the disease is due to a gram negative encapsulated bacillus but it lacks corroboration from other workers.

The disease usually takes a mild course, the acute symptoms subside in six or seven days. The small spots in the cornea, which remain for a few days more, cause interference with vision but usually vision is restored to normal within three weeks. Some cases, however, take a longer time to clear up.

If the infiltrates penetrate more deeply into the substantia propria and Descemet's membrane, the damage to the eye may be permanent. Fortunately, however, these cases are rather very very few.

The treatment of this condition is very simple. Normal saline wash three or four times a day, mercurochrome (½ per cent) drop twice daily, and in cases of young adults guttæ atropinæ (1 per cent) once a day, if necessary. In case of elderly individuals atropine should not be given but can quite effectively be replaced by guttæ homatropinæ hydrobrom. (1 per cent) once a day. Protective goggles should be worn. Sometimes, if the affected eye is bandaged, the condition clears quickly.

If the condition is not treated early, corneal opacities may persist for quite a long time and cause impairment of vision.

TO BE PUBLISHED IN COMING ISSUES

Some Epidemiological Factors of Guinea-Worm Disease as noticed in a Recent Survey of Osmanabad District by Dr. S. Raghavender Rao, L.M.S. (HYD.), D.T.M., D.P.H., D.SC. (CAL.) From H. E. H. the Nizam's Medical Public Health Department.

Modified Malaria Flocculation Test by Drs. V. R. Naidu, M.B.B.S., M.S. (PATH), F.A.S.C.P., D.T.M. & H., (ENG.), M.R.C.P. (LOND.), A. Vasudeva Rao, M.B.B.S., and M. D. Rajagopal, M.B.B.S. From the Department of Pathology, Medical College, Mysore.

Contraction Ring as a cause of Dystocia by Dr. K. C. Shah, M.R.C.O.G. (LOND.), D.C.H., (ENG.), L.M. (ROT. AND DUB.). From the B. Y. L. Nair Hospital, Bombay.

The Role of Venom Therapy In Chronic Painful Conditions by Capt. J. S. Chowhan, M.B., B.S., I.M.S., O.C. Army Medical Store India, Meerut, U.P.

Ring Worm in Vizagapatam by Dr. V. Govindan Nair, M.R.C.P., F.R.F.P.S From the King George Hospital, Vizagapatam.

Effects of Sulphanilamide on Smallpox by Drs. S. G. Vengsarkar, M.D., F.C.P.S., T. A. Poonen, B.A., M.B., B.S. and S. A. Walavalkar, M.B., B.S. From the City Fever Hospitals, Arthur Road, Bombay.

Deterioration in Physiological Activity of Digitalis by Dr. B. Chatterji, M.B., M.SC. From the Physiological Standardisation Laboratory, Bengal Chemical & Pharmaceutical Works Ld., Calcutta.

Treatment of Pelvic Disproportion by Cæsarean Section and Induction of Premature Labour by Dr. M. W. Alwi, L.R.C.P. & S. (EDIN.), L.R.F.P.S. (GLAS.), L.M., D.G.O, (DUB.), From the Osmania Hospital, Hyderabad-Deccan.

Etc. Etc. Etc.

Prescribe Cremaffin

Cream of Magnesia with Liquid Paraffin
in the treatment of

Constipation associated with acidity and digestive disorders.

Cremaffin exhibits the well-proved virtues of cream of magnesia and liquid paraffin without any of the disadvantages of the latter.

It is presented as a pleasantly flavoured emulsion incorporating cream of magnesia (magnesium hydroxide) and liquid paraffin. Cremaffin provides a bland, non-irritant laxative, suitable for persons of all ages, and it is free from all risk of creating a habit.

Patients suffering from haemorrhoids will find it an ideal laxative, as it softens the bowel contents and promotes easy evacuation.

Burnol

The best healing antiseptic.

Burnol is a specially prepared creamy emulsion containing 0.1% of Neutral Acriflavine presented in handy, collapsible tubes ready for immediate use.

The Neutral Acriflavine present in Burnol acts as a preventive of germ infection and is non-irritant to the tissues and non-toxic to the phagocytes. Burnol is readily applied and the old dressings are easily and painlessly removed with no risk of damage to the healthy granulation tissues.

Clinical evidence proves it to be an extremely satisfactory preparation for the treatment of all minor injuries and septic conditions generally.

FOR PARTICULARS PLEASE APPLY TO: BOOTS PURE DRUG CO. LTD., 10 LALL BAZAR, CALCUTTA.

MANUFACTURED BY:
BOOTS PURE DRUG CO. LTD. NOTTINGHAM. ENGLAND

"WHY GET OLD BEFORE YOUR TIME"

'Proof of the Pudding is in the Eating'

TONU-ARTERIN TABLET

Reduces blood pressure.

COMPOSITION :—
Rawlfia Serpentina—gr. iii.
Sodi Nitrite—gr. ⅛.
Phenolphthalein—gr. ¼.
Atropin Sulph.—gr. 1/1200.
Pot. Iodide—gr. ⅛.
Durva Extract.

TONU-MALARIN TABLET

Best Tonic for Malaria

COMPOSITION :—
Ferri Sulph. Exsiccatus—gr. ⅛.
Arsenious Acid—gr. 1/120.
Quinine Sulph.—gr. iv.
Aloin—gr. ⅛.
Ext. Nucis Vomici—gr. 1/12.
Ext. Belladonna—gr. 1/24.
Alstonia. (No Sample)

Vitalia Tablet—An unique product best and most original, for improving health.

Vitalia Tablet—Is a general Tonic to keep up health for a long time both in appearance and feeling.

Potencia Tablet—Gives dynamic energy and rejuvinates the whole system of both male and female.

Potencia (Special) Liquid—Used as a *specific* for indifferent health and it also restores vigor in extreme cases improving general and nervous system. (No Sample).

Paunchicide Tablet—Reduces and removes a growing or a grown Paunch. (No Sample).

Wanted Agents throughout India.

TONU-CALCIN TABLET

Used in Malnutrition, Tuberculosis and Hæmorrhages.

COMPOSITION :—
Calcium Lactate—gr. v.
Sodium Glycerophosphate—gr. i.
Brahmi Extract.
Ayapan Extract.
Vitamin B, C and D.

TONU-LIVERIN TABLET

Cures enlarged or congested Liver.

COMPOSITION :—
Aloin—gr. ¼.
Podophyllin—gr. ¼.
Iridin—gr. ¼.
Ext. Nux Vomica—gr. ⅛.
Ext. Belladonna—gr. 1/16.
Kalmegh - Kesoraj - Arahar Exts., Vitamin B Complex & Vitamin C.

Paunchicide Tablet—Contains no glandular extracts. (No Sample)

Stockists: **FRANK ROSS & CO. LTD.,**
O. N. MUKHERJEE & SONS,
and All leading Chemists of Calcutta.

Please ask for Free Samples and Literature
EAST AND WEST LABORATORY.
P. O. Box No. 11208, CALCUTTA

Manufacturing Chemists of Excellent Combinations of the Effective Eastern and Western Medicines.

HEALTH **VITAMIN** PRODUCTS

● **AVITOL**—Vitamin A in oil, 2000 I.U. per c.c.; for parenteral use in Retarded growth, Lowered resistance to infections, Xerophthalmia & Night blindness.

● **THIAVIT**—Vitamin B_1 (Thiamin chloride in crystalline form) for parenteral use in Beri-beri, Epidemic dropsy, Polyneuritis, Anorexia and loss of weight. 1 c.c. amp. containing 2 mg. and 10 mg. Thiamin chloride.

INDIAN HEALTH INST. & LAB., LTD.
Beliaghata Main Road,
Calcutta

'Phone: B.B. 2857. 'Gram: "DATMAL"

We specialise in:—

A.R.P. First Aid
Equipments
All sorts of
First Aid Boxes &
Requisites
First Aid Dressings
Ambulance Stretchers

CHEMICAL & SURGICAL WORKS LD.

(Successors to Badam Bros.)
95A, Chittaranjan Avenue,
(Opposite Medical College Eye Hospital)
CALCUTTA

CASE NOTE

A CASE OF CHRONIC ULCER TREATED WITH LEAD PLATE

A. C. BOSE, M.B.,
Pathologist, Mayo Hospital, Calcutta

D. P., Hindu male, resident of Sultanpur in U. P., 17 years of age, a robust young boy came to the Skin Department of the Mayo Hospital in September, 1941.

History of onset of illness—While at Sultanpur he had an injury from a shoe nail which resulted in an ulcer. This grew in size in a fortnight's time to that of a pice. Then he came down to Calcutta and was under the treatment of the company's medical officer but, unfortunately, the ulcer still went on increasing in size and the patient came under the observation of the writer. The size of the ulcer was then bigger than a rupee.

Character of the ulcer—It was an almost circular and deep sloughing ulcer, the margins were raised and edges undermined. The discharge was sticky, foul smelling and sero-sanguinous. The ulcer was painful and had a tendency to bleed easily.

General examination—There was no enlargement of lymph glands; and there were no systemic or local abnormalities.

Laboratory findings—Wassermann's reaction and Kahn's test were negative. No abnormality was detected in the urine.

Discharge from the ulcer—Direct smear stained with Giemsa's stain revealed pus cells and fusiform bacilli in fair numbers (*vide* Fig. 4 in plate facing page 297). These bacilli on successive examinations with the progress of the ulcer showed marked diminution in the number and in the later stages bacilli were rarely visible in the smear. Triponema Vincenti were very few at the beginning.

Histopathology—There was coagulation necrosis in the superficial layer and proliferation of fibrous tissue in the deeper layer. There was hypertrophy of the prickle cell layer at the extreme margin.

Treatment—The patient was first given routine antiseptic treatment for some days; later on, the ulcer was cleaned with hydrogen peroxide and washed with normal saline and dressed but to no effect.

The patient was finally admitted into the Mayo Hospital on the 8th October, 1941. On the 13th instant a lead plate was cut to a size little bigger than the ulcer and was applied over it with adhesive plaster. Every time there was a great accumulation of discharge under the plate; the wound was washed with sterile normal saline, the plate was sterilised and replaced. This was continued until the patient was discharged on the 27th October, when the ulcer was greatly filled up and reduced to less than half the original size (Fig. 1).

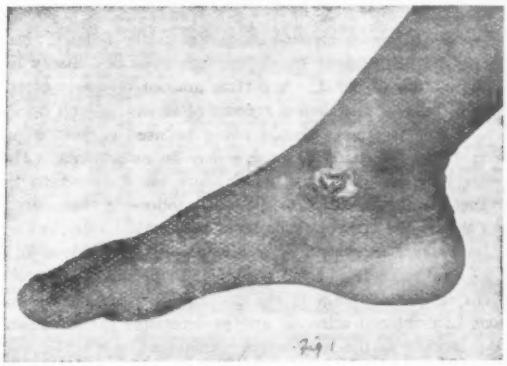


FIG. 1

The patient was then treated in the outdoor as before until the ulcer became very small and superficial, and the discharge was very scanty. Finally the same was dressed with scarlet red ointment (½ per cent).

SUMMARY

1. This disease occurred in a place where it is neither endemic nor sporadic.

2. There was no question of any deficiency disease or debilitating condition, nor of ankylostomiasis nor was the ulcer associated with varicose veins.

3. The simple and painless treatment with the lead plate gave very satisfactory result though different to the existing routine treatment.

ACKNOWLEDGMENT

I am grateful to Dr. F. H. B. Norrie, Surgeon-Superintendent, Mayo Hospital, for his guidance in the treatment and his permission to report this case. My thanks are due to Dr. B. P. Trivedi, Professor of Pathology, Medical College, Calcutta, for the microphotograph.

REFERENCES

PATTERSON, R. L. (1908)—*Indian M. Gaz.*, 43:401.
ROY, D. N. (1939)—The British Encyclopedia of Medical Practice, Vol. 12, p. 258 (Butterworth & Co. Ltd.).
SCOTT, L. B. (1917)—*Indian M. Gaz.*, 52:231.

CURRENT MEDICAL LITERATURE

MEDICINE

The Importance of Blood Examination in General Practice

Young (*Med. Press & Cir.*, 1942:207:23) deals with the subject under the following heads giving illustrative case reports:—

Importance in diagnosis—Diagnosis of the type of anæmia and even of its presence or absence can only be reliably made by examination of blood. A certain amount of waste of effort occurs through a mistaken diagnosis of anæmia which does not exist. Liver treatment should never be used without a preliminary blood count for (1) there may be no anæmia, (2) the anæmia may be of a type which does not respond to liver, (3) there is the difficulty of diagnosis following treatment and (4) there is the risk of thrombosis in certain cases.

Importance in control of treatment—Frequent blood examinations are necessary in the treatment of pernicious anæmia to prevent relapses, to prevent the development or progress of the lesions of combined sclerosis and to determine the effectiveness of the batches of the liver extract employed.

Importance in conditions in which anæmia may be missed—Many cases of pernicious anæmia are first encountered on the surgical side where they have been sent on account of gastric symptoms; there are on record many instances where the abdomen was opened up and the blood examination made only when no abnormality was found out. Other conditions which call for routine use of the Tallquist are uterine hæmorrhage, for a year or so after gastrectomies and gastroenterostomies and in cardiac cases in which degenerative changes are sometimes secondary to anæmia but may be due to primary heart disease. Antenatal supervision also calls for routine hæmoglobin estimation in all cases.

Leucocyte count—The value of total and differential leucocyte count in the diagnosis of the presence or otherwise of inflammatory condition is well known. An Arneth count with a shift to the left is particularly useful in conditions not associated with pyrexia when it may provide the only satisfactory evidence of a toxæmia in cases of vague symptomatology.

The misuse of blood counts—In the aplastic conditions produced by drugs such as sulphonamides, gold, amidopyrine, sedormid, etc., although blood counts may be necessary for diagnosis when limits have been overstepped, any reliance upon them for prophylaxis is dangerous. The proper prophylaxis consists of complete avoidance of their use, with others in limitation of the total dosage or duration of administration.

Interpretation of blood counts—A complete co-operation between the pathologist and clinician is necessary for proper evaluation of a complete hæmatological examination.

Heart Disease of Old Age

Perry (*Practitioner*, 1942:148:117) writes that the changes in the heart which are found in old age are largely, if not entirely, due to the results of atherosclerosis of the coronary arteries and of the aorta and the changes in the coronary vessels lead to progressive ischæmia, fibrosis of the myocardium and the aortic disease, if it involves the first part of that vessel, may give rise to some degree of aortic stenosis. Patients with rheumatic heart disease or cardiovascular syphilis rarely live over the age of 60 and similarly hypertension is largely a disease of 45-65 period though most old people have slightly high systolic pressure with a normal or even slightly low diastolic pressure. The differences to be noted between the atherosclerosis occurring prematurely in middle age and that met with at the end of a long life are: (1) the progress and course of the changes are much more gradual in the latter and (2) the effects are, on the whole, much less severe since the severity of the lesion resulting from a vascular occlusion depends on the rapidity with which the occlusion is produced. As a result of this pathology the symptoms of heart disease in old age are effort pain or those of congestive cardiac failure. Angina pectoris occurs less often and the syndrome of coronary thrombosis is relatively rare after the age of 75. The main type of cardiac irregularity found is auricular fibrillation and some degree of heart block occurs not infrequently. Cardiac enlargement is rarely marked except in association with hypertension. With increasing years the whole tempo of life is slowed down, not only in the rate of progress of pathological lesions but also in the daily bodily exercises and the demands made on the heart and circulation. The result is that, taking all in all, the prognosis is relatively good in heart disease in old age though hazards of infection must be taken into consideration in this connection. Treatment consists of *rest* which must be tempered with moderation, prolonged immobilization holding out very definite dangers such as hypostatic pneumonia in the aged. An hour's rest after each meal will take off the heart's work during digestion and rest for one or perhaps two days a week spent in bed, for the patient who is up and about, may give some of the advantages of rest without introducing the risks of long immobilization. Following symptoms of coronary thrombosis, however, rest must be absolute for at least 3 weeks instead of 6 in the young. Insomnia must be dealt with and if it is due to orthopnœa or dyspnœa opium or morphine is the one drug likely to be of value and in these circumstances every effort should be made to enable the patient to sleep in as erect a posture as possible. If the insomnia is unrelated to the cardiac lesion 20 or 30 grains of sodium bromide or 5 to 7½ grains of sodium barbitone may be used with good results. *Exercise* in the form of a short walk will do good to the patient provided it is stopped when symptoms *e.g.*, pain or dyspnœa appear. *Diet.* Provided the patient is a moderate eater the less the diet is altered from normal probably the better. Meals should not be bulky and farinaceous dishes are probably best avoided. Fresh fruit or fresh fruit juices should be included in the diet as freely as possible and if there is œdema the total fluid intake should be restricted to 2 pints or less. *Drugs.* It is worth while to try the effect of digitalis in all patients who develop symptoms of heart failure. In cases with severe dyspnœa and in cases with peripheral congestion and œdema the most valuable drug is mersalyl or some similar compound. (Mersalyl may be given intramuscularly two or three times a week and experience has shown that it may be

SULPHARSAMIN
SULPHARSPHENAMINE B.P.

Test reports place it as a Standard preparation for intravenous and intramuscular Therapy in Syphilis, Asthma, Filaria etc.

ANTADONE
Aspirin with Codeine

Relieves pain, action immediate, and no depressing effect. 1 or 2 tablet once or twice daily.

GASTROLON
Kaolin in Paraffin Emulsion,

For gastric-ulcers, gastritis and acidity—soothing and protective lubricant.

STANDARD'S Sera, Vaccine, Injectable Products and B. P. Preparations Possess a Unique Reputation Throughout India for Quality and Purity. STANDARDISED ACCORDING TO INTERNATIONAL METHODS ACCEPTED BY ALL AUTHORITIES. Supervision by Best Experts in India.

LIVERGEN
Liver-tonic universally known to be the best. 1 to 3 tablespoonful twice daily after meal.

ERGOSTAT
For Uterine Hæmorrhage absolutely reliable. Contains standardised Ergot, Hydrastis, Hamamelidis, Lodh and Nux Vomica.

SULPHANILAMIDE "44"
For Pneumonia, Broncho-Pneumonia, Acute Bronchitis. Least toxic and of high therapeutic value.

Phone Park, 2900, 2 Lines. THE STANDARD PHARMACEUTICAL WORKS LTD. CALCUTTA. "Tele." VINTONE

FILARSEN
Specific for Filariasis

RAYCALCIN
Advance Therapy in Tuberculosis

Under the direct supervision of

DR. A. K. ROY CHOUDHURY, M.D.
DR. K. S. RAY, M.A., B.SC., M.B., CH.B.
MR. D. N. CHOUDHURY, President, Bengal Mill Owners Assn.

THE POLYCLINICAL LABORATORY LIMITED,
6-A, SURENDRANATH BANERJEE RD.,
CALCUTTA.

SERPINA
TABLETS
for HIGH BLOOD PRESSURE
INSANITY, INSOMNIA
HYSTERIA, EPILEPSY etc
Prepared from cultivated root bark of Rauwolfia Serpentina SERPINA tablets being successfully used in leading Hospitals.
THE HIMALAYA DRUG Co.
PHONE:- 26727. BOMBAY 9 GRAMS-HIMALAYA

Available at leading Chemists all over India.
Price: 100 tablets Rs. 2/8. 500 tabs. Rs. 11/4
Descriptive literature and clinical sample free.
SERPINA tablets are manufactured by the same firm who gave you **DIABETOX** and **LEUCOL.**

GLASSWARES

FOR LABORATORIES

Insist on "SIGCOL" GOODS

The Complete Range you require

Manufactured by

SCIENTIFIC INDIAN GLASS Co., Ltd.,
6, CHURCH LANE, CALCUTTA

ELIXIR

MELGADINE

A palatable alcoholic extract of Cod-liver Oil containing vitamins A, B_1, B_2, C and D, glycerophosphates of body building minerals, appetising tinctures, glycerine, honey and fruit juice.

A super-tonic for all ages and for all climates and seasons.

DRAGON CHEMICAL WORKS
34, Clive Street, Calcutta.
Laboratory—TOLLYGUNGE.

OPOFEN

Soluble Medicinal Opium Tablet—superior to Morphine and Opium.

A deviation of Indian Opium rendered soluble as hydrochlorides of alkaloids in their natural proportions, free from any inert and irritable substance. It is a standardised preparation, highly effective as Analgesic, Hypnotic, Sedative and in Gastro-Intestinal troubles.

In tube of 10 tablets of 1 gr.
and each contains 0·3 gr. Morphine.

Ask for detailed literature.

CALCUTTA CHEMICAL,
Calcutta.

Painless ADI BRAND T.M. REG. *Shock-free*

'SEPTADIN'

2.2 ccm
Albu-lipin
Defensive
Immunogen
in reactive base for
OFFENSIVE ACTION
Single Injection Yields Results

Issued by,

Biochemical Research Unit,
ADI LABORATORIES at ADI PARK, ENTALLY

ALLIED DRUG INDUSTRIES, LIMITED
2, Mission Row, Calcutta

'Phones: Office, Cal. 4141
Labs, Park 3266

'Grams: ADISEPTULE, Calcutta.

safely used for long periods). For cases with effort pain the use of one of the xanthine compounds, such as theobromine sodium salicylates, 10 grains thrice daily may be helpful. Prophylactic use of trinitrine (tab. trinitrine 1/100 grain chewed immediately before undertaking any exertion which has caused pain in the past) is of far more value than its administration when pain appears. Pain resistant to rest and trinitrine is likely to be due to acute coronary occlusion and hence the patient must not take more than one tablet at a time as further decrease in the pressure will be harmful.

Effects of Drugs on the Alimentary Tract

Gold, Faust and others (*J. A. M. A.*, 1941:117:1336) in course of a discussion on the effects of the drugs on the alimentary tract observed the following important facts:

Gastrointestinal antispasmodics—Novatropine, syntropan and trasentin are a few of the many substitutes for atropine that have recently received attention. Novatropine closely related to homatropine, was found in animal experiments to possess considerable peripheral action but clinical observations have not been favourable and there is no material advantage over atropine. Syntropan has two kinds of action, one directly on the smooth muscle and the other on the parasympathetic nerve endings; has no central effects and no salutary pupillary effects. The action of trasentin is entirely confined to smooth muscle and the drug seems to be a fairly satisfactory compound for relieving gastrointestinal spasm used in large doses, 75 mg. three or four times a day by mouth or intravenously. For relieving spasm of the colon trasentin and atropine in large doses are the two drugs that are helpful.

Drugs used for postoperative distention—Solution of posterior pituitary does not only stimulate the smooth muscle of the intestine but it causes blanching of the blood vessels of the intestine which lasts for a pretty long time and interferes with the local circulation; moreover, it produces coronary constriction. Prostigmine is a better drug and there is not any particular objection to the routine use of the drug postoperatively but caution must be taken in cases with history of bronchial asthma and other allergy and in cases which are sensitive to parasympathetic drugs. Morphine (1/18 grain) and prostigmine (1/30 grain) may be combined and repeated every two hours for four doses, if necessary, withholding morphine when there is no pain.

Drugs used for relief of gall bladder colic—Morphine does not relax the gall bladder biliary passages. On the contrary it causes spasm of the biliary passage but it does relieve the gall bladder pain because it raises the central threshold to the perception of pain and the attitude towards pain. Nitrites and atropine have the reverse effect and relax directly the biliary passages.

Drugs used for amœbiasis—Emetine is a dangerous drug and should not be used in excessive amounts. The reaction of the patient, over a period of several months after a course of injection, should be given careful consideration before additional emetine is used. Diodoquin has a higher iodine content than chinioform (Yatren), is much less likely to be absorbed from the bowel wall and therefore, less likely to produce toxic systemic effects. Chinioform is accompanied in many cases by watery diarrhœa and some opine that hyperperistalsis of the bowel is a very useful adjuvant in washing out little lacunæ in which the amœbæ may be packed, thus giving them the immediate effect of the drug. Acetarsone (Stovarsol) frequently produces intestinal colic even if the patient did not have an arsenic idiosyncrasy. Chinioform has all the advantages of acetarsone with few, if any, of the contraindications.

Drugs used for tapeworm infection—Oleoresin of male fern and carbon-tetrachloride appear to be equally efficacious under adequate management. The two are approximately equally toxic. The oleoresin of male fern has the advantage that following its administration the tapeworm, when freed from the bowel, is passed in 90 per cent of the cases, with the head in a recognizable condition; therefore, one can definitely evaluate the efficacy of the treatment. Carbon-tetrachloride, on the other hand, frequently causes digestion of the more delicate parts of the tapeworm including the head and neck, so that one cannot take a definite post-treatment diagnosis as to its removal and therefore, one has to wait for from 3 to 6 months to determine if cure has been effected.

In connection with the use of anthelmintics it is pointed that the routine use of purgatives before and after is essential for the following reasons: (1) to get the maximum effect of the drug on the parasite, (2) to have the minimal absorption of these products through intestinal wall and (3) in case of a large worm not to have the byproducts of the worm absorbed from the intestinal wall into the system. Sodium sulphate is preferable if there is no contraindication to the use of saline purgatives.

Magnesium Sulphate in Hypertension of Acute Nephritis

Rubin and Rapoport (*Am. J. Med. Sci.*, 201:734) write that the ability of magnesium to lower the raised blood pressure in acute nephritis has been known for some time and has usually been attributed to a general dehydrating action or a localised cerebral dehydration. The authors treated a series of cases in the following way: The patients were given 75 c.c. orange juice every two hours and urine was voided at the same time. Hourly observations were made upon the blood pressure. After 24 hours of this regime, magnesium sulphate (0·2 c.c. of a 50 per cent solution per Kg. of body weight) was given into the muscles of the buttock. This procedure resulted in a reduction of the blood pressure without inducing diuresis. In certain cases where the urinary output is considerable (600-1000 c.c. per day) the magnesium sulphate may fail to act, possibly because it is too rapidly eliminated from the body. In discussing the possible mode of action of magnesium sulphate the authors point out that the beneficial effect obtained from this therapy may be due to a relaxation of generalised vasopasm.

SURGERY

Method for Preventing or Diminishing Peritonitis from Leakage after Intestinal Resection or Perforation

Koster (*Am. J. Surg.*, 1941:53:248, Ref. *Am. J. Digest. Dis.*, 1941:8:25) to prevent continuous seepage of bowel content into the peritoneal cavity with resulting fatal peritonitis which may begin hours or days following a well performed anasto-

mosis, has utilized a simple expedient of exteriorizing the anastomosis and closing the wound around it. When the anastomosis has healed completely, the exteriorized bowel is safely returned to the peritoneal cavity. The principle is applicable to the entire intestinal tract excepting the rectum and rectosigmoid and in the occasional case of gastric anastomosis. The same principle is also applicable to certain perforated localized lesions of an exteriorizable portion of the gastrointestinal tract. If it is not possible to close the perforation or if after closure the security of the suture line is doubted, as for example in perforated diverticulitis with peridiverticulitis with induration, exteriorization of the bowel is employed. When the perforation has either closed spontaneously or after subsequent suture, the exteriorized loop of bowel is reposited in the peritoneal cavity. This method involves at least two operative procedures but it does not eliminate peritonitis from leakage after perforation or resection of exteriorizable bowel. This procedure is based on two propositions: (1) That peritonitis from leakage cannot occur if the leak is walled off outside the peritoneal cavity and (2) that it is safe to reposit bowel that has been exteriorized for several weeks after cleansing with saline solution. The author described his experience with 14 cases so treated. Three complications were encountered: injury to the bowel during reposition, infection (abscess) of the wound and postoperative hernia. One abscess of the wound responded to wet dressings and another required incision and drainage. In no case had an abscess been found in the peritoneal cavity. No difficulty had been encountered with bowel improvement despite the abnormal position of the exteriorized loop of intestine.

Causes of Painless Gastro-duodenal Haemorrhage

Moschcowitz and others (*Am. J. Med. Sci.*, 1941:202:52) write that hæmatemesis, melena or both, without pain is common and recurrences are common. There are many causes for painless gastroduodenal hæmorrhages aside from peptic ulcer. The authors report 14 cases in 10 of which autopsy was performed and in classifying them the following causes of hæmorrhage were found: gastroduodenitis, healed duodenal ulcer, portal thrombosis, liver cirrhosis, lymphosarcoma of the stomach, aplastic anæmia, endophlebitis of hepatic veins and erosions. Gastroduodenitis, with or without erosions, was the commonest cause of painless gastroduodenal bleeding in the series. Less frequent are true callous peptic ulcers. In one case only no cause was determined. In painless gastroduodenal hæmorrhage where rœntgen-ray evidences are absent or inconclusive, further study of the patient is obligatory to determine the cause of bleeding.

Progress in the Preoperative and Postoperative Care of Patients with Lesions of the Biliary Tract

Ravdin (*Bull. New York Acad. M.*, 1941:17:500) in outlining a programme of treatment for cases of cholelethiasis, specially those with common duct stones points out that these cases are usually associated with some degree of liver damage for which the patients are placed on a diet consisting of 75-80 per cent of their calories as carbohydrates and 20 per cent as protein, allowing 3000 calories as the total daily intake with the addition of crystalline vitamin B, and varying amount of desiccated bile. To prevent postoperative hæmorrhage the synthetic naphthoquinones are used to overcome any prothrombin deficiency—transfusions of blood and forced diet are used if the prothrombin time does not become normal. Surgery is withheld if the serum bilirubin concentrations are increasing or decreasing, waiting until it reaches a 'plateau'. The anæsthetic of choice is spinal anæsthesia preceded by ephedrine to prevent marked depression of the blood pressure—other anæsthetics may produce serious liver injury. Subcostal incision affords better exposure, less postoperative pain, few pulmonary complications and postoperative herniæ. The author describes a 'decompression' apparatus for postoperative use which prevents excessive loss of bile externally and thus prevents massive extravasation of blood into the liver while allowing early entry of the bile into the intestine. Finally, the common duct should be thoroughly explored and cholangiogram taken before removing the 'T' tube.

Distant Metastasis in Cancer of the Upper Respiratory and Alimentary Tracts

Braund and Martin (*Surg. Gynec. & Obst.*, 1941:73:63) from the study of the influence of distant metastases from cancer of the upper respiratory and alimentary tracts in 284 patients who died from cancer involving these areas report that 63 or 23 per cent were found to have blood borne dissemination, that the most common sites of distant metastases were lungs, liver and pleura in the order named, that blood borne metastases to the stomach and the intestines were rare (only 6 cases were found in the series—4 in the stomach and 2 in the intestines). From literature 144 cases of intestinal metastases were collected but only in 1 case was the primary lesion found in the areas studied in this paper. Metastases appeared most frequently in those patients who died from cancer of the mucosa of the cheek, gingiva, palate, nasal cavity and œsophagus. It was impossible to determine the probability of the visceral metastases from the morphology of the tumour or the age of the patient but those with cervical lymph node involvement upon admission had distant metastases 2½ times more often than those in whom the local lesion was the only evidence of disease at the first examination.

Tuberculous Empyema

Ehler (*Internat. Abst. Surg.*, 1942:74:97) gives in the following lines the summary of his observations: Tuberculous empyema is a frequently occurring complication of artificial pneumothorax used in the treatment of pulmonary tuberculosis and is caused by tubercle bacilli which reach the pleural space usually by the rupture of the pulmonary foci of infection. Tuberculous empyema is to a great extent preventable and avoidable. Prevention depends on the proper selection of cases for artificial pneumothorax that cannot be made efficient by the division of visceroparietal adhesions that prevent effective collapse of the lung under treatment and the early abandonment of an ineffective pneumothorax that cannot be made efficient by the division of adhesions. Tuberculous empyema is rather badly treated and hence the mortality is still high (33 per cent). The treatment should be started when an infected effusion first appears in the pneumothorax—there is no wisdom in a policy of 'watchful waiting' or 'skilful neglect'. As the

empyema heals by the progressive growth of adhesions between the pleural layers any method of treatment that does not produce obliteration of the pleural space must be considered of temporary value even though permanent cures are sometimes obtained thereby. Simpler methods such as aspiration and pleural lavage are often effective and are specially valuable since the therapeutic pneumothorax may be maintained—if such methods do not promptly alleviate the symptoms the fluid is sterilized and its further formation prevented to use surgical methods. There is no available drug or chemical that will effectively and safely destroy the tubercle bacillus in the human body. Extrapleural thoracoplasty with or without external drainage of the empyema cavity has produced the greatest number of cures of tuberculous empyema with lowest mortality. External surgical drainage is an essential treatment of tuberculous empyema with secondary pyogenic infection; surgical drainage of pure tuberculous empyema may be necessary when pulmonary spread of tuberculosis is threatened because of bronchopleural fistulæ, when pus reaccumulates very rapidly, and when other treatment fails to alleviate severe toxicity.

Treatment of War Injuries of the Eye

Kirwan (*Indian M. Gaz.*, 1942:77:195) writes that war injuries to the eye are classified thus (according to Tyrell): 1. Non-penetrating—(*a*) dust and debris in the conjunctival sac, (*b*) glass in the conjunctival sac, (*c*) concussion injuries of the globe; (2) penetrating but not perforating—(*a*) wounds of the eye lids, (*b*) corneal foreign bodies, (*c*) burns of the eye lids, conjunctiva and cornea, (*d*) glass in the cornea, (*e*) glass in the sclera and (*f*) subconjunctival metal or dust or other foreign matter; (3) perforating injuries—(*a*) metal (*b*) glass, (*c*) other matter—(*i*) of cornea, uncomplicated, (*ii*) of cornea, complicated, (*iii*) of corneo-scleral junction and (*iv*) of sclera.

In eye injuries early operative interference is not quite such a necessity as is usually taught. Cases that had to be left 24 hours before operation did quite well, despite the danger of infection.

Non-penetrating injuries—In these cases the conjunctival sacs are filled with mucus and dirt and it is wise to get the eyes washed 2-hourly with an alkaline wash (2 per cent) and instil solution 1 in 1000 silver nitrate before any operation is done. All glasses are to be removed under local anæsthesia. Concussion or blast injuries of the eye are divided into (1) hyphæmia, (2) rupture of the iris, (3) rupture of the lens capsule, (4) subluxation of the lens, (5) vitreous hæmorrhage, (6) dilated retina and (7) commotro retinæ. These are treated in the orthodox way. Traumatic detachment of the retina is rare.

Penetrating but not perforating injuries—Wounds of the eyelids are most difficult to deal. Wounds are cleansed with warm saline, hydrogen peroxide, etc. and all obviously damaged tissues excised and the edges sewn up but if sepsis is likely to result the wound is left open. When there are multiple foreign bodies on the cornea they are best left alone, the pupils are kept well dilated with oily atropine (1 per cent.) and later with liquid paraffin or borovaseline. The foreign bodies rapidly fall out and any that do not, can be taken off later. Burns—tannic acid should not be used for skin burns of the face; triple dyes give better results. Burns of the cornea are best treated with *tullee grass* impregnated with vaseline and balsam of peru; the *tullee grass* dressing is covered with six or eight layers of gauze wrung out in warm saline and care is to be taken to keep the gauze moist by adding more saline from time to time; the gauze is changed every 4 hours, the *tullee grass* dressing is changed twice a day at first and later once a day. Glass in the cornea and sclera are dealt with in the same way as foreign bodies on the cornea. Subconjunctival foreign body requires excision.

Perforating injuries—Glass is the most important cause in these injuries. Fortunately in most cases glass works its way out even from the depths of the wound. Unless the eye ball is too pulped to save there is no harm in waiting to see if the eye can be saved from removal, specially if both eyes have been seriously injured. Glass in the vitreous is best left alone and an eye ball should not necessarily be removed because glass is there but as a rule intraocular glass cases have the eye disorganised. Local use of sulphanilamide as a preventive of sepsis or as a treatment of sepsis once established has not proved of much value though there are many advocates for its use in 30 per cent solution. Removal of the foreign bodies are best done under local anæsthesia as one gets the patient's co-operation but if the patient is sensitive, general anæsthesia should be employed preferably by the intravenous route with sodium pentothal or evipan. Gas and oxygen or cyclopropane can also be used, but ether should be avoided and chloroform never used.

OBSTETRICS AND GYNAECOLOGY

Diabetes Mellitus and Pregnancy

Barns (*J. Obst. & Gynæc. Brit. Emp.*, 1941:48:707) in reviewing a series of 25 diebetic pregnancies in 21 patients observes that the maternal prognosis is good and pregnancy does not make diabetes worse provided that this is well treated (the insulin requirements are increased as pregnancy advances in 74 per cent of the cases), that the incidence of toxæmia of late pregnancy in pregnant diabetes is not much higher than in non-diabetics and that the fœtal mortality is high (44 per cent). Fœtal death can occur even in absence of ketosis which probably increases the risk to the fœtus, specially if it is severe. Toxæmia appears to be a potent cause of intrauterine death of the viable fœtus in the pregnant diabetic. The author suggests that the pregnant diabetic should be managed in the following lines: (1) The diabetes must be well-balanced and ketosis and the onset of diabetic coma and hypoglycæmic coma should be avoided at all costs. Teeth and other possible foci of sepsis should receive attention. (2) Adequate antenatal supervision must be given so that the first signs of toxæmia of late pregnancy may be observed as early as possible and treatment instituted in a hospital, (3) The fœtus should be x-rayed in the later weeks of pregnancy to exclude any gross fœtal abnormality. (4) The method of delivery: In those cases that are not complicated by toxæmia or have only a very mild degree the patient should be allowed to go to term and delivered *per vias naturales* (or cæsarian section if the size of the fœtus necessitates this). Where there is more than a mild degree of

toxæmia and the x-ray does not show any gross abnormality incompatible with survival after delivery, cæsarian section should be performed when maturity and size of the fœtus is considered compatible with survival (about the 36th week). In the elderly primigravida it is perhaps preferable to select cæsarian section as the method of delivery rather than run the risk of obtaining the dead fœtus delivered *per vias naturales* (Diabetes should be controlled during labour or cæsarian section). (5) During the puerperium fœtus should have extra sugar to eliminate any tendency to hypoglycæmia.

Placenta Praevia

Mehta (*Calcutta M. J.*, 1942:39:613) in describing the outlines of the principles of treatment of placenta prævia points out the following facts:

The maternal mortality is much higher in domestic than in institutional practice, as the facilities for the various life-saving measures for restoring the patient are not available in domestic practice. The delay in treatment may seriously prejudice the chances of success. As hæmorrhage is by far the chief cause of maternal deaths every attempt should be made to prevent blood loss before, during and after delivery. As sepsis is a frequent cause of death all manipulations should be reduced to the minimum and should only be undertaken if everything is ready for eventualities. Institutional treatment is always the best, because of expert medical aid, aseptic surroundings and immediate available help. Treatment mainly depends on severity of bleeding. If the bleeding is slight and the patient not in labour the patient is put to rest and under careful observations till she delivers, with the use of sedatives, if necessary. If the bleeding is severe and if one or more of the following conditions are present cæsarian section after blood transfusion is indicated: (1) os closed, (2) complete placenta prævia, (3) elderly primipara, (4) patient wants a live child, (5) disproportion. In cases where cæsarian section is not indicated the choice is between the following treatments: (*a*) Willett's forceps; (*b*) pressure of half breech; if vertex presenting—after external version or bipolar version or internal version, one leg is pulled down; if breech presenting—one leg is pulled down; (*c*) rupture of membranes and putting a tight abdominal binder, if placenta does not cover internal os and cervix well dilated with strong labour pains, (*d*) De Rib's bag is out of date and is not used. Rupture of the membranes and application of a tight binder with a vulval pad and T-bandage is ideal for placenta prævia of the incomplete variety, provided the bleeding has not been severe and good pains are present and the os is dilating.

PEDIATRICS

Rheumatism in the Child

Pearson (*Med. Press & Cir.*, 1942:207:64) writes that the manifestations of rheumatism in early life are more protean than in the grown-up and the chief of them are: (1) synovitis of joints, (2) endocarditis, myocarditis and pericarditis, (3) rheumatic nodules, (4) erythema marginatum, (5) chorea (6) muscular or fascial rheumatism, (7) pleurisy and (8) tonsillitis. The first five manifestations are evidences of what is now known as acute specific disease—acute rheumatism and the last three manifestations cannot be truly included as part of the specific rheumatic syndrome. The child may start the illness in various ways, the three chief modes of onset being: (a) tonsillitis (with or without synovitis), (b) chorea and (c) general ill health. In the observation of the active rheumatic patient during the bed-ridden stage attention will be chiefly centred on the evidence of (1) the temperature, (2) the pulse rate, (3) the blood sedimentation rate and (4) changes in the size of the heart and the development of the bruits. The temperature is variable and its absence cannot be regarded as evidence of absence or subsidence of activity of the infection for which the pulse rate and sedimentation rate will be better guides. Regarding cardiac involvement the following general observations are made: (1) one must expect in most cases to find evidence of affection of all elements of the heart, and in particular a slight degree of pericarditis is usual, (2) no hasty assessment of cardiac damage can be made from the presence of the common systolic and diastolic murmurs which in some cases can completely disappear; the extent of the damage must be measured more in terms of function and size of the heart, than merely on the nature of the bruits, (3) disease of the aortic valves only develops in a small number of cases and is not an usual feature of the first attack.

Treatment. Every case of active rheumatism must be carefully watched on the lines suggested; on the one hand for a recrudescence manifested by rise of temperature with slight sore throat and on the other for a steady decline of the infective process. Rest in bed is the first essential—the child should not be allowed to do anything for himself. Aspirin and salicylates help to reduce temperature and relieve arthritic pain and also seem to minimise or even thwart the effect of streptococcal infection. Continued heavy dosing with salicylates during the stage of active carditis leads to no good results and may even be harmful for the toxic effects produced. There is no success yet to record in the treatment of rheumatism by sulphonamides and there is no specific medicine to cure an infected heart. For prophylaxis the following measures are helpful: (1) Careful supervision, specially at the time of any trivial infection, of the type of child very prone to get rheumatism—the spare, highly strung child with a good pink complexion and with well formed rather massive teeth, particularly if there is a history of rheumatism in the family. (2) General hygienic management of these children, avoidance of excessive physical or mental work, avoidance of chilling, of over-crowding, of living in damp, badly built houses and supplying good nourishing diets to these children. (3) Keeping the throat in healthy condition and removal of much enlarged and obviously infected tonsils when the child has a better color, is gaining weight and the other tests (pulse rate, sedimentation rate etc,) are satisfactory. (3) To take slight ailments and early manifestations of the disease seriously and under such conditions a susceptible child should be kept in bed and if suffering from sore throat should be treated with aspirin.

Infantile Diarrhoea and Vomiting

Campbell and Cunningham (*Arch. Dis. Child*, 1941:16:211) in dealing with the subjects give the following classification of infantile diarrhœa: (1) Specific (*a*) infective, *e.g.*, B. dysenteriæ Sonne, B. dysenteriæ Flexner and typhoid-salmonella

TUSSANOL

(EPHEDRINE COUGH SYRUP)

Contains Ephedrine Hydrochlor. gr. ¾ in each fluid ounce, combined with fluid extract of Thyme, Glycerine, Spirits of Chloroform and Syrup. The ideal remedy against all Diseases of the Respiratory System.

For any catarrhal complaints, Acute Bronchitis, Chronic Bronchitis
and of especial value in the treatment of

WHOOPING COUGH

Laryngeal Catarrh, Bronchial Catarrh, Asthma, Etc., Etc.

MARTIN & HARRIS, LTD.,
CALCUTTA, BOMBAY, MADRAS, KARACHI.
Supplies available from all Chemists and Dealers.

BI-COLATES

(STEARNS)

DEPENDABLE CHOLERESIS and CHOLAGOGUE ACTION

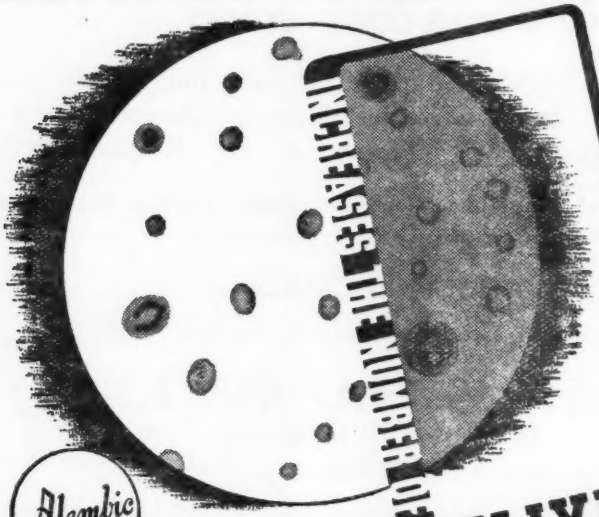
A scientific combination of the bile salts, Sodium Glycocholate and Sodium Taurocholate, with Cascara Sagrada, Phenolphthalein, and Oleoresin Ginger.

Bi-Colates (Stearns) are particularly indicated in cases of hepatic insufficiency, either functional or in association with early cirrhosis, catarrhal and other forms of jaundice, bilious attacks, intestinal auto-intoxication and the prevention and treatment of gall-stones.

Bi-Colates (Stearns) are also indicated in all conditions in which a true choleretic and cholagogue is required.

Manufactured by:
FREDERICK STEARNS & CO., DETROIT, U.S.A.
Sole Agents in India & Burma.
MARTIN & HARRIS LTD.,
Calcutta—Bombay—Madras—Karachi—Rangoon.

HÆMOGLOBIN THERAPY AT ITS BEST



ELIXIR HÆMO-GLOBIN

For anæmia of any origin due to protozoal infections like Malaria, Kalaazar and deficiency diseases like Sprue, Rickets, Beri-Beri, etc., or in cases of pregnancy, hæmorrage, etc. Elixir Hæmo-globin quickly restores the normal balance by an appreciable increase in the numerical strength of red blood cells. Widely prescribed by physicians everywhere.

With liver and stomach extract or plain.

Each fluid ounce contains:-

Hæmoglobin	... ...	2 grs.
Stomach Extract	.. ...	1 gr.
Liver Extract	... ...	2 grs.
Organic Copper Salt	... ...	trace.

with flavouring & diluents.

ALEMBIC CHEMICAL WORKS COMPANY, LIMITED, BARODA

group, (b) toxic, *e.g.*, staphylococcal; (2) due to local infection, *e.g.*, pelvic peritonitis or symptomatic of general disease; (3) alimentary-infectious complex group (A.I.C. group) (a) associated with parenteral infection and (b) without evidence of parenteral infection.

The authors report that in the series of 574 cases of gastro-enteritis (A.I.C. group) there was a death rate of 27·7 per cent. The greater proportion of patients contracted the disease at home and only about 20 per cent of the total number were admitted from the institutions. Although cases were admitted throughout the year the demand for beds was greater in summer and autumn. On admission there was evidence of parenteral infection in less than one-third of the total number and approximately four-fifths of these showed involvement of the respiratory tract. Infections of the middle ear and mastoid accounted for a relatively smaller proportion of the total respiratory infections than has been noted by other observers. Taking the series as a whole, parenteral infection had no apparent effect on the general death rate. Age seems the most important feature in prognosis as the great majority of the deaths occur in infants less than nine months of age. Though the general nursing management must be of a high order to ensure success the most important single factor in treatment is the relief of dehydration. The continuous subcutaneous route for dehydrated cases is favoured bringing the changes between normal saline, Ringer's solution and 3 per cent glucose in 0·25 per cent saline and in severely ill cases this should be supplemented in the first 24 hours by intraperitoneal or intravenous therapy. In some cases blood transfusions may be necessary, specially in patients with a definite anæmia and in those with longstanding infection such as otitis media. Plasma transfusions are valuable in later stages of the illness when there is hypoproteinæmia, either with or without œdema. Apart from the chemotherapy of certain parenteral infections, drugs are of little value in treatment. Aperients are of value in a limited number of cases in which food poisoning is suspected but are of little value in any cases after the first 24 hours of illness. Brandy in 20-30 minims doses was of value as a stomach sedative in some cases in which there was difficulty in feeding and recurrent vomiting but it was of no value in cases where vomiting was persistent and intractable. The great prophylactic value of breast-feeding is again demonstrated and it can confidently be asserted that if a properly breast-fed infant is protected from parenteral infection, the danger to life from infantile diarrhœa and vomiting is negligible.

Nasal Sinusitis in Children

Crooks (*Practitioner*, 1942:118:76) writes that the common causes of sinusitis are conditions which are associated with inflammation of the upper reespiratory tract, *e.g.*, colds influenza and the infectious fevers, specially whooping cough.

Acute sinusitis is not commonly recognized in the child, but chronic sinusitis is frequent, resulting from one infection but it is more often the result of repeated inflammations. The sinuses which are most often diseased in children are the maxillary antra and the organisms usually found in them are in the order of frequency pneumococcus, Pfeiffer bacillus and the streptococcus. Allergic rhinitis is often accompanied by sinusitis. Acute sinusitis is likely to be overlooked unless accompanied by swelling over the diseased sinus. In children the ethmoids are more often so inflamed than the other sinuses. Treatment is conservative and the ostium of the inflamed sinus can be made to open, allowing the escape of matter without resort to surgery. The child is put to rest, given sulphanilamides and the nasal mucous membrane is shrunk by inhalation of menthol, if the child is old enough to carry this out, and by local application of shrinking drops or spray to the nose. (½ per cent ephedrine hydrochloride and argyrol in normal saline). If this treatment fails the most simple surgical procedure drawing off the pus from the nose is adopted.

Chronic sinusitis in the child is quite common. The antrum is most often at fault and in most instances the disease is bilateral. The following are the characteristic signs and symptoms: nasal discharge, catarrh, frequent or even continuous cold, cough, nasal obstruction due to the sinus discharge lying in the nasal airway and swelling of nasal mucosa over the inferior turbinates causing the characteristic 'adenoid face', sore throat, headache, otitis media and poor general health. Diagnosis rests on observations of the clinical manifestations just pointed out and the preservation of at least an open mind about the possibility of its being a common disease in childhood. Rhinoscopy, transillumination, radiography and sometimes proof puncture are essential aids for diagnosis. Treatment of chronic sinusitis must start with the proper and careful treatment of every cold and upper respiratory infection, so that no residual inflammation is left smouldering in a sinus and this is done by adopting such measures as rest, proper diet (eliminating excess of carbohydrate and including adequacy of vitamins), proper ventilation and by the use of shrinking drops or sprays as mentioned before. Displacement treatment advocated by Prœtz is sometimes useful. Short wave diathermy is helpful in clearing up non-suppurative sinusitis. In obstinate catarrhal sinusitis, as in more severe infections producing pus, general treatment should be supplemented by lavage. The technique is simple: The nose is sprayed with decicain and 10 minutes after, a cotton wool-dressed probe, which has been dipped in 10 per cent cocaine hydrochloride and adrenaline 1:1000 solution is inserted into the inferior meatus of the nose. It is left there for half an hour after which the puncture of the antrum through the inferior meatus is painless. The antrum is washed with normal saline, sometimes, with the addition of argyrol or sulphanilamide, once a week unless it is clear. The average number of washes required is three but many more may be required. It would be worth doing this thirty times if a cure is effected without operation and it is sometimes done as often as this. Operation is only undertaken if all else fails.

In treating sinusitis the relationship of infection of the tonsils and adenoids to sinusitis must be considered. Postnasal discharge from the nose or sinuses causes repeated inflammation and swelling of the lymphoid tissue of the nasopharynx and finally a large mass of adenoids may form and it will be necessary to remove the adenoids before treatment of the sinuses can be effective.

NOTES AND NEWS

THE TREATMENT OF PHOSPHORUS BURNS, POISONING, WOUNDS

Treatment for burns and scalds from Phosphorus: General Instruction: If clothing adheres to the burned surface, do not attempt to remove it, but cut clothing carefully around the burned area.

A slight burn may be dressed with sterile gauze covered with butesin picrate ointment, boric ointment, sterile vaseline (petrolatum) or 5 per cent tannic acid. Bandage securely but not tightly.

A more severe burn should be dressed with sterile gauze covered with butesin picrate, boric ointment or sterile vaseline (petrolatum). The physician can then redress the burn after determining its degree and extent.

Wash immediately with large quantities of water, then with a 5 per cent solution of sodium bicarbonate. Burns should be treated with 1 per cent copper sulphate solution. Dress with butesin picrate ointment, boric ointment or sterile vaseline as directed above.

(Butesin picrate is a product of Abbot Laboratories U.S.A. Boric Ointment or Sterile Vaseline are standard preparations available in the market).

Treatment for the Phosphorus Poison (swallowed): 1. Induce vomiting by administering the universal antidotes: 2 parts pulverised charcoal, 1 part magnesium oxide, 1 part tannic acid. Dose—One heaping teaspoonful in small glass of water. 2. Administer 2 grms copper sulphate in 100 c.c. water. 3. Administer large quantities of water and 5 to 10 c.c. of oxidised turpentine (turpentine which has had long long exposure to air). *Do not give milk or white of egg.* 4. Administer 15 gms. of magnesium sulphate in 100 c.c. water.

Authority:—"Laboratory Emergency Chart, Fischer Scientific Company." As approved by several Public Health Authorities and Administrations in America.

Wounds—Wounds caused by yellow phosphorus must be given immediate treatment. When a particle of phosphorus comes into contact with the skin, it gives cause to a very severe wound and unless the wound is treated immediately, yellow phosphorus enters the blood stream, a much smaller dose may be fatal.

Phosphorus wounds should be treated with an oxidising agent such as permanganate of potash or hydrogen peroxide.

If the wound is not a deep one and if immediate treatment can be given, a strong lotion of permanganate of potash should be used, the wound being repeatedly washed.

In case of deeper wounds or delayed treatment, it is recommended that a 33 per cent hydrogen peroxide solution be used. Only after a complete removal of all the yellow phosphorus, and a thorough cleaning up of the wound, can the usual treatment for burns be given—*Safety News.*

TRAINING OF PHARMACISTS

The happy news that the Benares Hindu University is once more taking the lead in the education of pharmacists will be welcomed by all. It is learnt that from July, 1942, a two years' Licentiate Course in Pharmacy open to matriculates, is being started. This will, no doubt, enhance the status of the profession of pharmacy which has received so little attention of the Government and the so-called custodians of this profession.

QUININE AND THE PRESENT WAR

The British Medical Journal in a recent issue has deservedly drawn attention to the seriousness of quinine shortage owing to the occupation of Java by the enemies. The war has shown how international industrial groups discouraged the production of quinine in India and other countries to the detriment of malaria prevention. In the past, malaria had caused more deaths than war injuries in several campaigns in tropical and subtropical regions and had seriously interfered with the efficiency of the fighting units.

The cultivation of cinchona trees needs certain climatic conditions. The present cinchona plantations in India do not supply even a fraction of our quinine requirements. India has adequate suitable soil for the cultivation of cinchona. Even if the plantations are extended now, it will take several years for the slow growing plants to yield the required quantity of quinine. Can we think of any tentative arrangements for the protection of the population from malaria during the intervening period?

One possibility is to find out synthetic antimalarial drugs, like atebrin and some of the sulphonamide derivatives. Some American workers (Coogeshall, L. T., Maier, J., and Best, C. A. *Jour. Amer. Med. Assocn.* 117, 1077, 1941) have found that sodium p,p'-diaminodiphenyl-sulphone-N, N_1-didextrose sulphonate (promin) have a curative effect on patients infected with either benign or tertian malaria. Sulphadiazine has also been seen to produce a demonstrable effect. It must be remembered that the synthetic drugs are more toxic than cinchona alkaloids.

Whether these synthetic drugs will be as cheap as quinine, it is not known. Totaquina, which consists of 15% quinine and 70% crystallizable alkaloids, obtained either from *Cinchona succirubra, Cinchona robusta* or *Cinchona ledgeriana,* might be given a trial, or small quantities of quinine may be combined with some of the synthetic derivatives, thus conserving the stock of cinchona derivatives which may be made available until the plantations reach maturity. It must be remembered, however, that quinine is not a true causal prophylactic and that it does not prevent infection but that it undoubtedly reduces the number of clinical attacks in a given period and that it has the advantage of extremely low toxicity. It has been suggested that efforts might also be made to recover the alkaloids from the urine of persons taking quinine by mouth.

We suggest that when cinchona plantations are developing, attempts should be made at university centres to manufacture suitable synthetic drugs of low toxicity.—*Science and Culture.*

WOOD TAR PRODUCTS

Wood tar obtained by the destructive distillation of Pinus species is the source of certain medicinal products (such as Creosotum B.P., Guaiacol and its derivatives, Pix liquida B.P., Oleum picis B.P., spirit of tar and rectified oil of tar). Medicinal wood creosote (Creosotum B.P.) is produced both from hardwood tars, such as beech, oak, etc., as well as from tars of Pinus species. Wood distillation is a well established industry both in Europe and America, whereas in India, we have a solitary hardwood distillation plant at Bhadravati (Mysore State), which is run primarily for the charcoal required by the Mysore Iron and Steel Works. Consequently, all the medicinal products obtained from tar used to be imported. The present war has brought about an acute shortage of these products, hence the question of their production in the country is receiving urgent attention.

During the war of 1914, the Forest Department of the United Provinces started the distillation of chir pine (Pinus longifolia) wood in the hill forests of Kumaon and produced a tar which was considered a good substitute for the imported product and, during the period of shortage, was readily accepted by trade for tarring of ropes and other marine purposes. Highly resinous stump wood, commonly known as 'chilka' or 'torch-wood', was used for distillation. The question of reviving the chir tar industry is now engaging the attention of the Forest Department of the United Provinces and they, in collaboration with the Forest Research Institute and the Turpentine Subsidiary Industries, Ltd., Bareilly are arranging for large-scale production of tar and its medicinal derivatives to meet the growing demand of the country. The manufacture of medicinal derivatives need not necessarily be a part of the parent chir tar industry, and any firm of manufacturing chemists could take it up, the required raw material being supplied by the parent industry. Backed by the demand of the Indian Medical Stores Department and of the country a full-fledged industry can certainly be run on a profitable basis, if properly organised. A leaflet giving fuller information on the above subject is available from the Forest Research Institute, Dehra Dun.—*Science and Culture.*

WAR AND INDIA'S DRUG INDUSTRY

Sixty-five per cent of the medical supplies and stores required for the armed forces are now made in India as compared with 25 per cent before the war, it is officially stated in Delhi.

Over 350 items of drugs and medicines, which were previously imported, are now being manufactured by the Government Medical Store Depot factories from raw materials of indigenous origin. The Indian drug industry also has evolved numerous equivalents or substitutes for imported essential drugs and is providing considerable supplies. During 1940-41, for example, the value of purchases made by the Medical Stores Department from the local trade amounted to over Rs. 104 lakhs or more than 6½ times the peacetime figure.

In surgical and orthopædic instruments, India is now by far the leading producer in the Eastern Group. Practically 100 per cent of hospital and operation theatre equipment and 98 per cent of orthopædic instruments and appliances are now produced locally. The only items not manufactured in India are delicate and complicated instruments for specialised use.

It is estimated that during the current year the Indian surgical instruments industry will have produced some five million instruments and appliances for supply to the Defence Services.

Vast quantities of surgical dressings and bandanges are also being produced. Recently, for one indent alone, nearly 12 million yards of textiles were converted into bandages. Some 120,000 lbs. of cotton wool and 16,000 lbs. of lint are being produced in India every month, while one Medical Store Depot factory alone is manufacturing nearly one million shell dressings monthly.

Though expansion in all these fields has been considerable, it is not yet commensurate with the magnitude of the demands. India to-day is the centre of a ring of war fronts and the calls made on her for ministering to the needs of casualties in all these theatres are daily increasing. Already she is the main source of supply for medical stores and equipment for the armed forces in the Middle East, Iran, Iraq and Burma. China also has recently asked for large quantities of quinine and other medical supplies. Russia has just been supplied with 76,000 surgical instruments through the Red Cross.

Besides, there are the 8,540 civil and military hospitals in British India alone, whose day-to-day needs also are a paramount consideration. These hospitals cater not only to a population of 297 million, but to an increasing influx of overseas casualties, evacuees, refugees and prisoners of war.

Last but not least, there is the ever-present contingency of air raid casualties on a large scale in the country itself. If this happens, the resources available will be taxed to the utmost.

India to-day is producing as much as she possibly can with the resources at her command. But there are certain serious handicaps under which she is labouring: Firstly, there is the lack of adequate plant and machinery and, secondly, a number of essential elements and raw materials required for the production of drugs and appliances are not available locally and must be imported. However, with the increasing aid now being rendered by the Government of the United States there is every reason to hope that these will soon be forthcoming.—*A. B. Patrika.*

MALE NURSES FOR MILITARY HOSPITALS

The Government of India have decided to recruit "Male Nurses" for employment in military hospitals during the present emergency. These men will be enrolled as Warrant Officers, Class II, in the Indian Medical Department.

Men offering for this service must be registered as "Male Nurses" with a Provincial Nurses Registration Council. Persons in Government service, who wish to volunteer, will also be eligible. Besides salary and allowances, men employed as "Male Nurses" will be entitled to free rations and accommodation.

RS. SIXTEEN LAKHS FOR ANTIMALARIA DRIVE

With the drive against malaria now being organised by the Army authorities, most of the cantonments in India will be free of the disease. The campaign which is expected to cost about Rs. 16 lakhs will involve the expansion and reorganisation of the existing antimalarial measures.

Under the new scheme emphasis will be laid on co-ordinating antimalaria methods in various stations. Mobile personnel will carry out operations throughout the year. These will not only benefit the military, but also the neighbouring civil population. With the collaboration of the civil and military authorities, the scheme may eventually form the nucleus of a drive against the disease in towns and villages as well as in military stations.

A special organisation is being set up under an officer in General Headquarters who will be assisted by a body of doctors and scientists specially trained for the work. Each station will be under the supervision of an antimalaria officer and an assistant each of whom will receive special training at the Malaria Institute of India. Similarly, a large number of insect collectors is being recruited who will also undergo a course of training at the Institute.

The organization will be armed with modern equipment to fight malaria. They will have electric sprayers, petrol driven sprayers, knapsack sprayers, blowers and mixers and will be provided with lorries and bicycles. The ammunition of these malaria fighters will include thousands of gallons of pyrethrum extract, malariol and Paris Green.

Although a great reduction in the incidence of malaria in the Army in India has occurred during the last 15 years, the rate still remains high. In 1940 total admissions to hospital per thousand of strength were 73·4 for British troops and 173·2 for Indian troops.

Any further reduction in the ratio is considered impossible with the existing arrangements, but it is confidently expected to occur, once the problem is tackled on improved lines.

BOMBAY MEDICAL COUNCIL

The Executive Committee of the Bombay Medical Council has administered a warning to the following medical practitioners registered with this Council:—

Dr. V. B. Mankad, M.B., B.S., (Bom.), Ahmedabad, to be more careful in future and strictly conform to the provisions of clause 6 (*a*) of the Warning Notice adopted by this Council, in the matter of publication of advertisements in lay press for notifying change of address.

Dr. H. A. Maniar, M.B., B.S., (Bom.), Bombay, to be more careful in future and strictly conform to the provisions of clause 6 (a) of the Warning Notice and rule 22 of the Code of Medical Ethics adopted by this Council in the matter of publication and distribution of his card, envelope form and the printed letter forms etc.

CORRESPONDENCE

The Editor is not responsible for any views expressed by correspondents—EDITOR.

THE EDITOR,
Journal of the I. M. A., Calcutta.

ABSCESS LUNG

Sir,

In your editorial on Abscess Lung in the May, 1942 number of the *J.I.M.A.*, you have been good enough to refer to my article on the same subject in the April issue. I thank you very much indeed for the same. However, there is a small error in it, which I would like to correct lest I should be misunderstood. It has been stated therein that I operated on 16 lung abscess cases. I did not operate on all the 16 cases but on only a very few of them, the majority of others having been operated on by one or other of the following surgeons, *viz.*, Major J. F. Shepherd, I.M.S., Major F. A. B. Sheppard, O.B.E., I.M.S. (and some also by the Late Major Ebden, I.M.S.). I had the good fortune to assist in all these operations. My paper relates to a study of 21 cases of lung abscess which occurred during the course of about 3 years in aggregate. I knew the entire course of all these cases from the time of admission to that of discharge, having been assistant to the surgeons mentioned above at the time.

In the article I acknowledged my indebtedness to the surgeons. I had, however, inadvertently omitted to mention the name of the late Major Ebden. Some of the cases referred to in the article were under his care. I am etc.

Maharanipeta
Vizagapatam, 11-5-42.

R. MAHADEVAN,
M.S., F.R.C.S.

* * * * * *

THE EDITOR,
Journal of the I. M. A., Calcutta.

LOBAR PNEUMONIA WITH ACUTE DILATATION OF THE STOMACH

Sir,

Acute dilatation of the stomach in lobar pneumonia as a complication [Sharma & Basu (1042)—*J.I.M.A.*, 10:207] has been mentioned by other authors also. "Acute dilatation of the stomach sometimes occurs in the course of the illness....." —Taylor's Practice of Medicine, Pp. 238, 14th Ed. The British Encyclopædia of Medical Practice writes "considerable gastric distention is not uncommon and may precede acute dilatation of the stomach"—Vol. IX, Pp. 725. "....."—*Ibid.*, Pp. 728. I am etc.

61, Municipal Office St.
Dacca, 16-5-42.

M. GONGULEE.

MALARIA

Qinarsol

In Modern Chemotherapy of MALARIA

QINARSOL is the most powerful parasiticide, equally efficacious against sexual and asexual forms

PACKINGS

• Boxes of 5, 10 and 50 ampoules of 1 and 2 c.c. each

Bottles of 50, 100 and 500 tablets

DOSAGE*

2 tablets three times a day for 4—6 days.

Painless intragluteal injections 1-2 c.c. according to the severity of the case.

*"RECENT ADVANCES IN MALARIAL THERAPY" by Dr. Menino De'Souza, B.Sc., M.D. Medical Bulletin, Vol. VII, No. 19, Oct. 7, 1939.

Product of Cipla Laboratories,

289, Bellasis Road, Byculla, BOMBAY.

An Empire Product

"NOVARSAN" Brand

NEOARSPHENAMINE

(Formerly called Novarsenobenzol) is manufactured in Canada by a purely British Company.

That Company has 20 years of continuous manufacturing experience.

Its arsphenamines are used by 20 Departments of Health in the British Empire.

Their sale is approved in Great Britain by the Ministry of Health.

"Novarsan" has a low toxicity, and a high therapeutic potency combined with stability.

Each batch is passed by the Medical Research Council.

The outfits are supplied for either Intramuscular or Intravenous use.

ALLEN & HANBURYS LTD., (Incorporated in England)
CLIVE BUILDINGS, CALCUTTA
And at 37 Lombard Street, London, E.C.3

The Fruits of . .
25 YEARS' EXPERIENCE

It is not too much to say that the bacterial purity of dried milk has been responsible for a great saving of child life.

The dangers of milk-borne infections are very real and if a dried-milk product like Glaxo had no other claim to make than that of bacterial purity it should command attention. The supply of safe pure milk is, in many places, a daily serious problem. Have regard, then, to this important fact:

GLAXO IS BACTERIALLY PURE; wherever a kettle of water can be boiled, pure safe milk can be obtained.

Other Glaxo qualities are:

DIGESTIBILITY. The curd produced in the stomach is light, finely dispersed, and easily digestible.

VITAMIN D and IRON. Extra vitamin D and iron are added in stated quantities.

CONSTANCY. The proportion of protein, carbohydrate, fat, iron and vitamin D are constant all the year round.

GLAXO LABORATORIES LTD.
Greenford - Middlesex - ENGLAND.

Representatives in India:
H. J. FOSTER & CO., LTD.

Glaxo

BOMBAY CALCUTTA
MADRAS LAHORE

ASSOCIATION NOTES

INDIAN MEDICAL ASSOCIATION—The following circular has been issued by the General Secretary to all branches of the I.M.A. in the coastal districts and it is published for general information of all members of these branches who may communicate directly with the Head Quarters in case they desire to take advantage of the benefits of the Scheme formulated therein.

INDIAN MEDICAL ASSOCIATION

Head Office:
12, Hindusthan Buildings,
Calcutta, the 29th April, 1942.

The Secretary,
———— Branch, I.M.A.,

Dear Sir,

Events have been moving fast in the Bay of Bengal and all coastal districts on the eastern sea board, from Chittagong to Rameswaram, are faced with the possibility of some kind of enemy action developing in them at no distant date. The respective local Governments have advised evacuation of non-essential population from these areas. The situation has, however, raised several important problems for members of the medical profession who practise in these districts. Some of them who belong to "essential" services cannot leave their respective stations while the members of their families have to be removed to some "safer" zones. There are others, who feel the same impelling necessity of sending out their families but cannot afford to remain away from their places of business for a long time as it would mean stoppage of all income, however small and unsatisfactory that might be. There are others again whose income does not admit of running two establishments; but they too have to remove their families away from the danger zones. I have been approached by many members of the Association belonging to one or other of the categories, mentioned above, who are residents of these danger zones and been asked if the Indian Medical Association can do anything for them at this grave hour of peril facing the country. The problem is, no doubt, a serious one and requires very careful consideration. If the Association was a rich body, ambitious schemes could be undertaken to offer substantial help to its members at this hour of crisis; but our funds not permitting launching of any such schemes, it is up to us to consider if we can offer some help to those of our brethren in the threatened areas who find it necessary to shift their families from their stations, by (1) finding cheap and suitable accommodation for the latter at places farthest from the danger zones, (2) arranging for their board and lodging on collective kitchen basis (for those families who may like it) to minimise expenses, and (3) ensuring free medical aid for the members of such families at their new places of residence. With this end in view, I have entered into correspondence with the Secretaries of the Punjab, U. P. and Bihar Provincial Branches of the Association and have suggested to them the following plan of action:—

(*i*) Branches of the Association located in "safer" zones, may engage one or more houses at their Headquarter stations and offer them for occupation by the families of those members of the Association living in immediately-threatened areas who desire to send them away. The number of families to be billetted in each such house is to be determined by the available accommodation with the option to run a common mess to economise their living expenses.

(*ii*) The members of those branches who undertake to shoulder such responsibilities will be requested to give free medical aid and to offer such other services as the members of such transported families may require.

The peculiar geographical position of some of our branches, *e.g.*, the eastern districts of the Punjab and the districts of Bihar and U. P. north of the Ganges, renders them immune from enemy action, at least for some months in the near future and they may, therefore, be considered comparatively safe. I have already heard from the U. P. Provincial Secretary who has approved of my scheme and has written to the local branches under his jurisdiction, enquiring which of them are ready to shoulder the responsibility.

He has, however, laid stress on two important points which are as follows:—

(1) The Local Branches must not be put to any financial obligation or loss.

(2) Families expressing a wish to come must occupy the accommodation arranged or pay their share of house-rent from the date fixed by them for such occupation.

I consider these conditions eminently reasonable and I do not think you would regard them as otherwise.

For the successful carrying into effect of this scheme, it is necessary for me to know beforehand how many members of your branch, who are stationed in "danger zones", would be willing to take advantage of the facilities offered by this scheme and whether they would agree to be bound by the above-mentioned two conditions stressed by the U. P. Provincial Secretary. We are opening a register in the Head Quarters office in which will be entered the names of such members and the accommodation they will need with any special preference for any particular part of the country where they would like their families to go. It will also help us if the members give us an indication of the maximum house-rent they would be prepared to pay and whether their families would prefer common messing.

I shall, therefore, feel extremely obliged if you will be so good as to bring the above scheme to the notice of the members of your branch as early as possible and request them to kindly communicate with my office at Calcutta direct or through you and let us have the necessary informations, if they desire to avail of the benefits of the proposed scheme.

Thanking you in advance for your valuable co-operation in the matter.

Yours faithfully,
P. B. MUKERJI,
Hony. General Secretary.

CALCUTTA BRANCH—Meeting of the Executive Committee held on 3-3-42 with Dr. P. Chatterjee in the chair:

The proceedings of the last two meetings were confirmed and statement of accounts for February, 1942, recorded.

The Committee expressed satisfaction at the reduction of rent of the Association premises by 50% from January, '42. In

this connection, the Committee thanked the office clerk for his earnest endeavour in the matter.

The reports of the Library and Scientific Sub-committees were read out and adopted.

In view of the fact that the income of members of the medical profession in Calcutta has fallen considerably due to the war and consequent evacuation of a large number of civil population of the town, it is resolved that the Calcutta Corporation be requested to remit the professional tax during the emergency period and till such time as normal conditions prevail.

Dr. Banbehari Banerjea was elected Hony. Secretary in place of Dr. T. N. Ghosh resigned; Dr. J. K. Mazumdar was elected Hony. Assistant Secretary in place of Dr. B. Banerjea and Dr. Bidhu Bhusan Roy a member of the Executive Committee in place of Dr. J. K. Majumdar.

The statement of outstanding subscriptions for the last session 1940-41 was placed before the house. Resolved that a reminder be sent to each of the members with a request to clear their dues of the last session.

The question of holding a social function was discussed and it was decided to hold a social function as early as possible. Resolved that the Social Functions Sub-committee be requested to take necessary steps in the matter.

BRAHMANBARIA SUB-DIVISIONAL BRANCH—Meeting of the Brahmanbaria Medical Association held on 8-2-42 at the temporary office of the Association:

Proceedings of the last meeting were confirmed.

The Objects and Rules, presented by the Secretary and the President of the Branch, were approved.

The Secretary was authorised to make necessary arrangements for recognition of this Association by the I. M. A.

The following office-bearers were elected: *President*—Dr. P. S. Bhattacharji, M.B., B.M.S.; *Vice-Presidents*—Dr. N. L. Chakrabarty, M.B. and Dr. K. K. Chakrabarty, B.SC., M.B.; *Secretary*—Dr. N. Bhattacharji, M.B.; *Asst. Secretary*—Dr. H. D. Roy, L.C.P.S. (Bombay).

HOOGHLY-CHINSURA & CHANDERNAGORE BRANCH—General Meeting held on 29-3-42 at Sunny Bank, Chinsura, with Capt. J. C. De, President of the Branch, in the chair:

The proceedings of the last Annual General Meeting were read and confirmed.

Letter of resignation of Dr. A. Dutta was read and his resignation accepted. Dr. D. N. Dhur was elected Vice-President in place of Dr. A. Dutta resigned.

The result of the report of the Liaison Committee with the Surgeon-General, Bengal, was read and accepted by the Committee.

Resolved that a sub-committee be appointed consisting of Capt. J. C. De, President, Dr. K. C. Mallik, Jt. Hony. Secretary, and Dr. J. Sreemani to frame rules which will be placed before the General Meeting of the Branch for final approval.

The meeting accepted with thanks the offer of Capt. R. Sinha to subscribe the following journals, *viz.*, the Lancet, the Practitioner and the Indian Medical Gazette for the Association and the use of his own books by the members.

Resolved that a copy of the resolution be sent to Capt. Sinha for his kind offer.

Further resolved that the Secretary be requested to prepare a list of the books and make necessary arrangements for the distribution of the books from the library which will be kept open from 10 a.m. to 12 noon and 5 p.m. to 7 p.m.

Copy of Dr. Miss L. Roy's application which was forwarded to the President of the branch, was read.

Resolved that a copy of Dr. Roy's application be sent to the Secretary, Bengal Provincial Branch of I. M. A.

Further resolved that Capt. J. C. De, President of the Association, who is a member of the Imambarah Hospital Committee, be requested to discuss Miss Roy's case in the next Hospital Committee meeting.

On the proposal of Dr. H. M. Chatterjee, it was unanimously resolved that, in view of the present critical economic conditions, the Association has heard with great concern about the impending resolution of the Hooghly-Chinsurah Municipality to impose professional tax on the members of the medical profession and strongly protests against it, and that a copy of the resolution be sent to the Chairman of the Hooghly-Chinsura Municipality.

U. P. PROVINCIAL BRANCH—Meeting of the Working Committee held on 26-3-42 with Captain K. P. Bagchi, the President, in the chair.

Proceedings of the last meeting of the Working Committee held on 15-2-41 at Benares, as circulated, were read and confirmed. Quarterly Accounts for October, November and December, 1941, were read and confirmed.

The Secretary informed the meeting that copies of the All-India Medical Conference resolutions had been sent to the various authorities concerned as also to the branches for necessary action.

The Secretary informed the action he had taken on the various Provincial Medical Conference Resolutions and also that copies of the same had been sent to the various Branches for necessary action.

The Committee considered the U. P. Government notification No. 1413/P.C.-11-1940, dated February 26, 1942, regarding fortnightly return of Drugs and letters received on the subject from the various branches. The Working Committee adopted the following resolution unanimously:

"The Working Committee of the U. P. Provincial Branch of the Indian Medical Association considered the Government notification mentioned above and came to the conclusion that it will be a great hardship to the busy medical practitioners and request the Government to exclude from its purview medical practitioners with registrable qualifications. The Working Committee regretfully note that the Government did not seek the advice of the U. P. Provincial Branch of the I. M. A. in their capacity of being an Advisory Body before the said notification was issued. If that had been done, they would have pointed out the difficulties of the medical profession."

The Secretary was asked to send copies of the resolution to the authorities concerned and to further explain the difficulties of the medical profession on the lines of the Lucknow Branch Resolution.

The Working Committee thought that the present was not an opportune moment and decided to postpone for the present the consideration of the Central Circular No. C-81 dated 30-1-42 regarding appointment of the Provincial Ethical Advisory Board.

The Working Committee consider that the U. P. Medical Reorganisation Committee report is a very important document and recommend that all Branches should get a copy of this report from the Superintendent, Printing and Stationery, Allahabad, and consider the recommendations and express and send their opinion to this office at an early date.

Consideration of a letter from the Principal, King George's Medical College, Lucknow, regarding Research Scholarships in Radiology, Pharmacology and Pathology.

Noted. The attention of members of the various branches is drawn. Further information on the subject can be obtained from the Principal of the College.

The Secretary informed the members that Government had now accepted the principle of remunerating all A. R. P. work but they had not yet laid down the terms of such payments.

The Secretary read out a resolution passed by the Lucknow Branch of the I. M. A. on the subject of dress for Indian Nurses in the various war services. The committee decided to endorse the resolution and write to the Government about it.

On the question of Independent Health Ministries in the New Constitution, the Working Committee adopted the following resolution, as adopted by the Central Council in Delhi:

"In view of the impending constitutional changes in the country, the Working Committee of the U. P. Provincial Branch of the I. M. A., is of opinion that in consideration of the extreme importance of maintaining at the highest pitch of efficiency, the health of the nation, which is the greatest asset of the country, early steps should be taken to enact legislation for the whole of India on the lines of the Public Health Act of the United Kingdom, providing for the constitution of ministries of Health in the Central and all Provincial Governments, whose sole responsibility shall be initiation, control and guidance of policies and measures directed towards improvement of the health of the people. In this connection, the Working Committee offers on behalf of the Indian Medical Association, its assurance of fullest help, co-operation and expert advice, whenever neecessary."

With a vote of thanks to the chair and to Dr. S. C. Sen for the Tea, the meeting terminated at 6 p.m.

BIHAR PROVINCIAL BRANCH—A meeting of the Working Committee of the Indian Medical Association, Bihar Provincial Branch, held on the 26th April, 1942, at 8 p.m. at Dr. Saran's residence, Exhibition Road, Patna, with Dr. R. Saran in the chair:

1. Letter no. C-90 from Hony. General Secretary, I.M.A., was read and its contents explained.

Resolved that a sub-committee be formed after opinion of local branches has been obtained, to consider the desirability of forming a Provincial Ethical Advisory Board. This committee will go into the details of the question.

2. Letter no. C-88 from Hony. General Secretary, I.M.A., was considered. Resolved that a communication be addressed to the Government of Bihar enquiring the terms and conditions on which they propose to utilize the services of medical men in the province for A.R.P. and sanitary work.

3. Letter from Hony. Secretary, I. M. A., *re.* help to members of the Association in danger zones.

Resolved that the Secretary be authorised to write to the branches, north of the Ganges, to find out in what manner they can help such members of the I.M.A. and whether they can find temporary abode for the families of such members at their respective stations and render other assistance which might be required.

4. Resolved that, in view of further reduction in the basic ration of petrol from the 1st of May, 1942, the Association requests the rationing authority to make a special consideration in the case of medical men. Members of the profession are already finding it difficult to meet the demands on their services with the amount of petrol they are getting at present, on account of outbreak of seasonal diseases like cholera, dysentery, typhoid and other eruptive fevers, which are bound to increase in the coming month, specially due to the large influx of people from outside the province. In the circumstances, it is necessary that the current petrol allowance to medical men should be increased liberally and not reduced. In the opinion of the Working Committee, an increase of 30 per cent over the current grant would meet the urgent requirement of the profession.

MUZAFFARPUR BRANCH—The following press communique was issued on 28-3-42 by the Honorary Secretary, Indian Medical Association, Muzaffarapur Branch:

I have read with utter disgust the editorial comments of the *Indian Nation* dated the 28th March, 1942 (second Dak Edition, page 4, column 3) under the heading 'Inoculation in Sitamarhi Mela.' The action of the Bihar Government in promulgating compulsory cholera inoculation for the mela visitors cannot be said to be anything but laudable. The cordoning off of the mela area by several inoculation posts can be described as nothing but praiseworthy. Strangely, however, these facts do not find their due prominence in the commentary. On the other hand, the first bold and precious move of the Government has been simply stamped as 'ordinarily.....nothing unusual'. No attempt has been made to elucidate to the lay public that it has only been by such measures that other governments have been able to control and eradicate fell epidemics from their countries. Instead of a word of encouragement to the Government, its action has been discouraged. Unthinkable, unimaginable and baseless rumours and spurious pleas have been made prominent and put forth in justification of a rotten alternative course, which has not stood the test of time and which has been worth rejection since a decade of the past. Though belated the action of the Government has been, what justification there is for a moment's delay in its execution where problems of life and death are concerned? What right the citizens of Sitamarhi, who figure so prominently in the said commentary or

for the matter of that their sympathetic commentator have or has for formulating a panacea which shall be bound to expose the entire health of the whole of Tirhut to the risks of the ravages of a scourge when the only and the most efficacious antidote has been prescribed to neutralise it? I can only hope that the Indian Medical Association will rise equal to the occasion against such irresponsible moves and make the hands of the Government strong in such embarrassments whenever it shall be due.

KALYAN BRANCH—Annual Report (May, 1941 to end of April, 1942) as presented by the Honorary Secretary:

The number of members on the list has risen to 12 including one from Dombivali and it is hoped that the rest will soon see their way to join the list.

Meetings—Business meetings were held several times during this period and various circulars sent by the Head Quarters and the Provincial office were discussed and necessary replies were sent. The average attendance at these meetings was 4. In addition to these, lectures meetings were held, when Dr. P. Raghavan M.D., and Dr. R. H. Karmarkar, F.R.C.S. both of Bombay spoke on Cardiac Failure and its Treatment and Organisation of a New Fracture Clinic respectively.

Library—The *Antiseptic* of Madras and the *Medical Bulletin* of Bombay are the only journals subscribed by the local branch while every member gets a copy of the Journal of the I.M.A. published monthly from Calcutta. Funds permitting, one more journal will be subscribed from May.

Civic activities—Members voluntered their services during the raging cholera epidemic of July '42; consented to conduct the medical examination of the K. R. H. School, but the school for reasons best known to them did not avail themselves of the offer made by us; carried out recently the medical examination of the S. S. Mandal's Girls' English School. Members have further volunteered their services to the Nagar Sanraksha Mandal for First Aid Work during the critical times that are to come. Dr. Modak conducted and finished a class in First Aid for ladies in Rambag Area while Dr. Choubal has just begun his class for men in the same locality. Dr. Phadke is also conducting a similar class for citizens in his vicinity. Members may, if needed, render aid in the Evacuee Camps that may come into existence sometime later if conditions demand them. This clearly shows that members are conscious of their duties as citizens. Three members of the Branch have been elected members of the local municipality recently, two amongst them, Dr. Mahatekar and Dr. Phadke, for the second triennium in succession. It is hoped that their presence will help to promote efforts for medical amenities and sanitation in the town, in days to come.

It is regarded that our representative to the Provincial Council could not, for obvious reasons, go and attend any meeting in Poona nor could any one attend the Poona Session of the M. & K. Provincial Medical Conference.

JALPAIGURI BRANCH—Resolutions passed at a meeting of all the medical practitioners of Jalpaiguri town,, organised by the Jalpaiguri Branch on 16-5-42 at 6 P.M. under the Chairmanship of Dr. A. K. Dutta Gupta, M.B., D.T.M., Offg. Civil Surgeon, Jalpaiguri:

Resolution No. 1—This meeting of the medical practitioners of Jalpaiguri town, do hereby consider that the move taken by the Jaipaiguri Branch of the Indian Medical Association in the matter of formation of an Emergency Medical Volunteer Corps in this town is quite justified and essential and that an Emergency Medical Volunteer Corps should immediately be formed here and that for the purpose of doing the preliminary works in this connection, an Organising Committee, consisting of the following members, namely (1) Dr. A. D. Guha Neogy, (2) Dr. S. C. Bhowmick (convener), (3) Dr. D. P. Dutta, (4) Diraj Mohan Sen, (5) Md. Soleman, be formed.

Resolution No. 2—This meeting of the medical practitioners of Jaipaiguri, do hereby, whole-heartedly support the endeavour of the Jaipaiguri Branch of I.M.A. in the establishment and maintenance of a Blood Bank branch here and consider it the duty of all medical practitioners, to collaborate with the local Hospital authorities and the Jalpaiguri Branch of I.M.A., in their work, by propaganda amongst the public about the utility of blood or serum transfusion in the treatment of air raid casualties and should try to enlist, volunteers for blood donation and offer themselves as such.

Be it further resolved that Drs. Sudhir K. Basu, J. N. Moitra and A. D. Guha Neogy be requested to meet with the medical practitioners often and on for the purpose of reminding them in the matter and inform the Secretary of the Jalpaiguri Branch of I.M.A., the net result of their work.

Resolution No. 3—Be it resolved that the name of Dr. Jyotish Chandra Ghose, L.M.F., be suggested to the Chairman, Jaipaiguri Municipality to be selected by him as a nominee of Jaipaiguri Municipality to have a course of training in Leprosy in the School of Tropical Medicine, Calcutta, as required by the Hony. Organising Secretary. British Empire Leprosy Relief Association in his letter dated 10th April, 1942, to the Chairman, Jaipaiguri Municipality.

Resolution No. 4—As no complaints from any medical practitioners of this town could be got, the Hony. Gen. Secretary of I.M.A. be informed accordingly.

Resolution No. 5—The question of the formation of a local Ethical Advisory Board was considered and it was resolved that the matter be postponed to the next meeting of the medical practitioners and, in the meantime, the Secretary of the Jalpaiguri Branch of I.M.A. be requested to correspond with the Hony. General Secretary of I.M.A., to know if the unregistered medical practitioners of long practice and good reputation should be included in the board of the Ethical Advisory Committee.

The meeting terminated with light refreshment served by the Jaipaiguri branch of I.M.A.

CITROCARBONATE

A palatable antacid which reduces gastric hyperacidity partly by neutralization and partly by buffering of acid

CITROCARBONATE functions as a systemic alkalizer and mineral nutrient. It supplies the four essential body bases: Sodium, Magnesium, Potassium and Calcium, in approximately the same proportion as they are found in the blood.

CITROCARBONATE is an efficient alkaline diuretic. The organic salts are rapidly absorbed and oxidized and thus contribute base and bicarbonate to the blood stream.

Indications: As an antacid, as a fever mixture, to alkalize the urine, as an aid in water therapy.

Dosage: 1 to 2 teaspoonfuls in a full glass of cold water as indicated.

Supplied in bottles of 4 and 8 ounces.

Manufactured by:
THE UPJOHN CO.,
Kalamazoo, Michigan, U.S.A.

Sole Agents:
T. M. THAKORE & CO.,
Town Hall Road, BURDWAN.

Head Office:—43, CHURCHGATE STREET, FORT, BOMBAY.
Branches:—WALAJAPET, LAHORE, KARACHI, SURAT, NOVA-GOA.

Neutral Glass Tubings

Homœopathic Phials

Adrenalin Phials

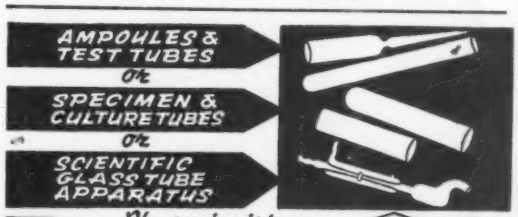
our Speciality.

THE NEW INDIAN GLASS WORKS (Calcutta), Ltd.,

Office—7, ROWDON ST., CAL.

'PHONE—P.K. 1732.

Stockists:
BOMBAY—BOLE BROS.
MADRAS—SRIKRISHNAN BROS.
KARACHI—TIRATH & CO.



Please insist on NGB PRODUCTS

A RELIABLE HOUSE FOR DEPENDABLE THINGS AT PREWAR PRICES. ONCE TESTED ALWAYS WANTED. GOVERNMENT TESTED NEUTRAL GLASS ALL THROUGH. SAMPLES ON ENQUIRY.

NATIONAL GLASS BLOWING CONCERN
Tel. Address: 'NATGLASBLO'. 9, NAYAN CHAND DUTT STREET, CALCUTTA.

KODAK

X-RAY FILM

WITH BLUE-TINTED BASE for EASIER VIEWING

OPAL (matte) & SUPER-SPEED (clear)

TROPICAL SAFETY FILMS

SPECIALLY HARDENED – GIVE PERFECT RESULTS

with

X-RAY Developing and Fixing Powders

CORRECTNESS

IN DIAGNOSIS

Depends ultimately on clarity of image and contrast in tone-values. Only a fresh film, the precise performance of which is known to the radiographer can give unvarying results.

Increased storage accommodation in India and access to factories all over the world ensures as far as it is practicable that reliable Kodak film will continue to reach you in perfect condition.

IN EXPOSURE

Often presents problems which are new to the individual radiographer. The Kodak Service offers you aid from experience all over the world, during a period as old as radiography itself.

KODAK LIMITED. (Incorporated in England) **BOMBAY . CALCUTTA . LAHORE . MADRAS.**

S. B. DEY SANATORIUM, KURSEONG,

For TUBERCULOSIS PATIENTS

(The only Climatic Sanatorium in Bengal)

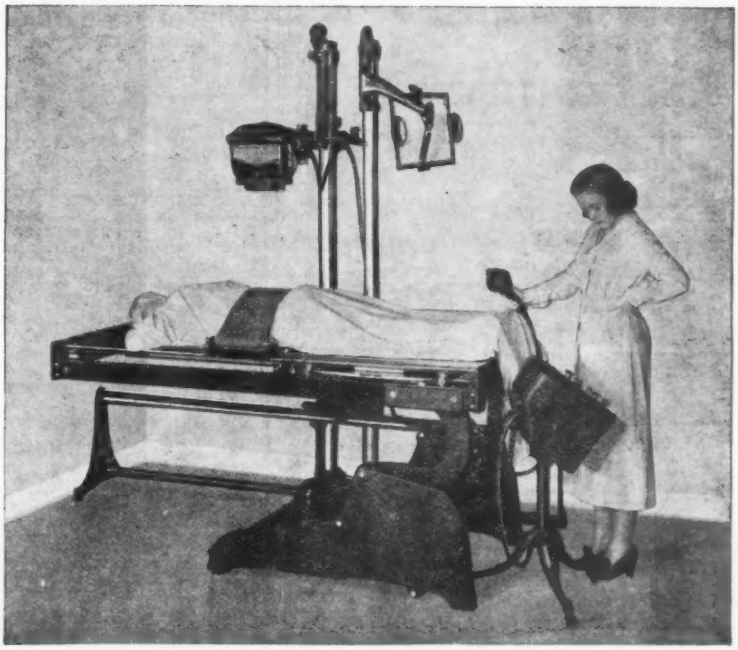
"The construction and arrangements of the Buildings are excellent and the views which must have a great influence on the happiness of the patients, are magnificent. The patients are receiving every care that modern knowledge can provide them, and it is great encouragement to Tuberculosis work in India to see this excellent institution."

(*Sd.*) BRADFIELD,
D.G., I.M.S.,
Chairman, T. B. Association of India.

For Details of ADMISSION please write to the Secretary,

CALCUTTA MEDICAL AID & RESEARCH SOCIETY,
6-A, Surendranath Banerjee Road :: :: Calcutta.

INVESTIGATE THE G-E MODEL D3-38



IT'S AN EFFICIENT COMPACT FLEXIBLE

MODERATELY PRICED COMBINATION X-RAY UNIT

You can sum up the D3-38 story in two words: better value. It has more of the features that you need and want—things that you and your colleagues specified—than any other moderate-price unit.

With its wide range of service, its refined, simplified control unit, its flexible, easy-to-operate tilt table with built-in Potter-Bucky diaphragm, its genuine G-E Coolidge Tube, the D3-38 offers you *bigger rupee for rupee value than any comparable equipment.*

You can rely on the D3-38 to routinely produce uniformly high quality results, and you can duplicate them accurately with ease. If you are interested in getting full measure for your X-ray rupee, it will pay you well to investigate the D3-38 before you invest in any X-ray unit. To get complete information, here's all you have to do —just fill in and mail the handy coupon, today.

Dept. A.

Please send me complete information about the G-E Model D3-38 Combination Diagnostic X-Ray Unit.

Name_____

Address_____

City_____

VICTOR X-RAY CORPORATION (India) LTD.

Bombay: Ballard Estate, P.O. Box 992.
Calcutta: Wellesley House, P.O. Box 2007.
Lahore: The Mall, P.O. Box 181.
Lucknow: Nazarbagh, Birkett Road.
Madras: Theagarayanagar.
Bangalore City: Narasimharaja Road.

SANITARY FITMENTS

for

HOSPITALS

AND

LABORATORIES

Phone :
Cal.
2491
2492
3093

Special Catalogue on request.

S. K. CHAKRAVARTI LTD.

SANITARY ENGINEERS,
MISSION ROW, CALCUTTA.

× HORLICKS - HORLICKS - HORLICKS - HORLICKS - HORLICKS ×

IN THE TREATMENT OF
RESPIRATORY DISEASES

In the treatment of tuberculosis and other respiratory diseases doctors find Horlicks a useful dietetic aid.

It is a partially pre-digested food containing fresh whole milk and the nutritive extracts of wheat and malted barley. Body building and energy giving elements are present in well balanced proportions. It is particularly useful in febrile cases where appetite and gastric digestion fails. It is well tolerated.

Horlicks requires mixing with water only, but milk, cream or raw eggs can be added if desired.

HORLICKS - HORLICKS - HORLICKS - HORLICKS - HORLICKS - HORLICKS - HORLICKS

× HORLICKS - HORLICKS - HORLICKS - HORLICKS - HORLICKS ×

A most efficient Analgesic and Antipyretic

The double action of Phensic, which is the principle of therapeutic mutual reinforcement, has won wide acclaim for this preparation. Its other important standard features are its chemical acceptability and the safety and ease with which it is tolerated by both sexes during any age period.

The Drugs employed are of the highest degree of purity and the greatest care is exercised in the process of compounding and tableting. Each tablet has an average weight of seven grains and has the following composition :—

Acetylsalicylic acid	..	gr. 3·37
Acetphenetidin	..	gr. 1·92
Caffeine alkaloid	..	gr. 0·46
Salicin ..	..	gr. 0·25
Excipient ..	..	gr. 1·00

Phensic is promptly absorbed and, therefore, exerts a correspondingly rapid action—analgesic, sedative and antipyretic. Phensic is non-narcotic and has no adverse effect on the cardiac function. Because of its synergistic character it produces a high therapeutic effect with minimum dosage.

Phensic can be employed with every confidence for routine administration, and can confidently be entrusted to a patient for self-administration in any of the following conditions:—

Migraine, Headaches, Toothache, Neuralgia, Nerve Pains, Neuritis, Rheumatic Pain, Rheumatic Fever, Arthritis, Sciatica, Gout, Dysmenorrhœa, Colds, Chills, Influenza and other Febrile Conditions.

Phensic

(Pronounced as FEN-ZIK)

A PRODUCT OF PHENSIC Ltd.,
68, Pall Mall, London, England

O.R.C.L.'s Twin Tonic

QUMARESH

Specific for liver & Stomach troubles

V

CARICAPEPTOL

"Elixir of Vegetable Enzymes" (Proteolytic, Amylolytic & Rennitic)

ORIENTAL RESEARCH & CHEMICAL LABORATORY LTD.
SALKIA, HOWRAH.

Indian Journal of Ophthalmology

A Quarterly Journal Specially Devoted to Ophthalmology

Managing Editor
DR. VAMAN D. SATHAYE
Member, Bombay Medical Council

with a representative all India Advisory Editorial Board and Editorial Committee.

Annual Subscription : Rs. 3/-

For rates of advertisements etc. write to

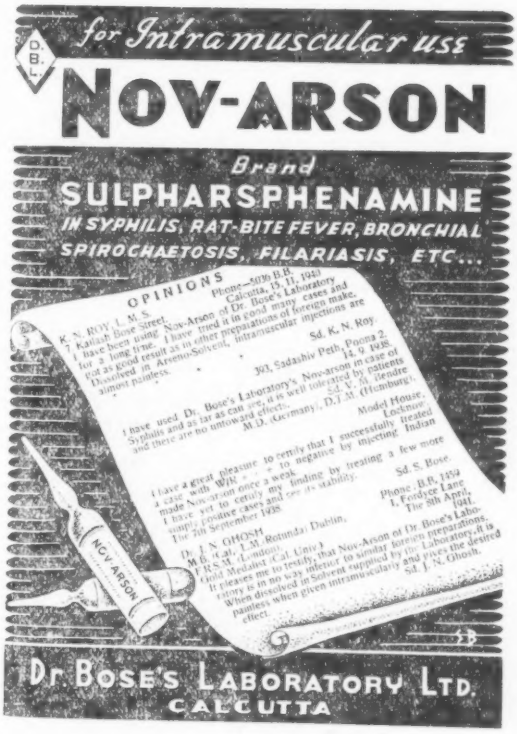
The Managing Editor
INDIAN JOURNAL OF OPHTHALMOLOGY

502, NARAYAN PETH, POONA CITY
The Best Medium For Advertisement

for Intramuscular use

NOV-ARSON

Brand
SULPHARSPHENAMINE
IN SYPHILIS, RAT-BITE FEVER, BRONCHIAL SPIROCHAETOSIS, FILARIASIS, ETC...



DR. BOSE'S LABORATORY LTD.
CALCUTTA

BUSINESS NOTICE

Business Communications: All communications relating to advertisements and subscriptions, or general business matter should be addressed to the Business Manager, Journal of the Indian Medical Association, 12, Hindustan Buildings, 1-A, Hogg Street, Calcutta.

Remittances: Remittances against advertisement bills and for subscriptions should be made by crossed cheques, Indian Postal Order or money order and payable to the Indian Medical Association, Hindusthan Buildings.

Annual Subscription: *Inland*—Rs. 6/- (including postage), *Foreign*—9 shillings or $3.00. Volumes begin with October issue of each year and run twelve numbers. (*Single Copy:* Current Volume—As. -/8/-; Back Volume—Re. 1/-).

Advertisements: Advertisers desirous of changing copy of their advertisements must notify their intention to do so and supply the management with fresh copy by the 10th of the month previous to that of publication.

Every effort is made to ensure the accuracy of advertisements appearing in the Journal. No recommendation is implied by acceptance, and the Indian Medical Association reserves the right to refuse or interrupt the insertion of any advertisement.

For PHYSIOTHERAPY

IN ALL ITS ASPECTS
READ

"The British Journal of Physical Medicine'

MONTH BY MONTH

In view of the rapidly increasing recognition of the importance of Physical Medicine, the Journal has been considerably altered both with regard to its editorial matter, and also in size, format, and typography. The new British Journal of Physical Medicine, while, as in the past, providing its readers with the latest and most authoritative opinions on all matters appertaining to physical medicine, includes shorter, essentially practical articles, and a variety of other information designed to be instructive to the general practitioner.

Single copy 2/- post free

Annual Subscription 21/- post free

A specimen copy will be sent gratis on application to:

THE PUBLISHER,

British Journal of Physical Medicine,

17, Featherstone Buildings, London, W.C. 1

ADVERTISEMENT.

Applications are invited for Emergency Commissions in the I. M. S. for service in India only. Candidates should be below 40 years of age and possess a medical degree registrable in Great Britain and Northern Ireland or an Indian Medical degree recognised by the Medical Council of India. Pay from Rs. 300 to Rs. 550 per mensem. Antedate, gratuity and other terms will be the same as for Emergency Commissioned officers of the I. M. S. recruited for general service. Copies of the prescribed application form and detailed terms and conditions of recruitment are obtainable from the Director General, Indian Medical Service, New Delhi, or the Civil Administrative Medical Officers of Provinces.

D. G. I. M. S.

Dated, New Delhi, the 21st June, 1942.

Printed by B. K. Sen at MODERN INDIA PRESS, 7, WELLINGTON SQUARE, CALCUTTA and published by DR. PRAKASH CHANDRA GHOSH, at Samavaya Mansions, Room No. 12, 1-A, Hogg Street, Calcutta.